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COMMERCIAL CAR JOURNAL
THE MAGAZINE FOR FLEET OPERATORS
Vol. LXII DECEMBER, 1941 No. 4

WASHINGTON RUNAROUND

OPM Has GVW Plan . . . Private Trucks Excluded . . . Confusion Compounded . . . Allocation On the Way . . . Military Challenge . . . Army and Lease-Lend Trucks . . . Civilian Pinch Coming? . . . Private Operators Act . . . Central Motor Transportation Committee Acts . . . and . . . A Batch of Briefs

by GEORGE T. HOOK
Editor, Commercial Car Journal

UNTIL the need for a more appropriate title is indicated by events, this department henceforth will be known as the "Washington Runaround."

For an indefinite period the news from Washington of interest to fleetmen will deal largely with priorities, allocations, production limitations and the problems they present. Using these terms month after month in news headlines would become not only a bore but an eyesore. So to solve the problem, and to fix this department in the minds of readers, the choice falls to a descriptive label—and "Washington Runaround" it is.

We are aware that the label has a variety of meanings, one of which the boys around the Office of Production Management are not likely to consider complimentary. But that is exactly why the ambiguity of "Runaround" is made to order for us. We use it as a composite of all its meanings, even the uncomplimentary, because if all we hear is true there are times when the OPM qualifies for the title.

But let's get on with the report.

OPM Has GVW Plan

The OPM is considering a plan for changing its classification of trucks from a tonnage basis to a gross vehicle weight basis. At present in OPM priority and production limitation orders a "light truck" is any truck below a manufacturer's rated capacity of 1½ tons. A "medium truck" is one with a rated capacity of 1½ tons and up, but less than 3 tons. A "heavy truck" is a truck rated at 3 tons or more.

On the gross vehicle weight basis a "light truck" would be one with a manufacturer's gross vehicle weight rating of 8999 lb. and under. A "medium truck" would range from 9000 to 15,999 lb. gross vehicle weight, and a "heavy truck" would be one with a gross vehicle weight of 16,000 lb. or more.

In the discussion, we understand that one of the very big producers of cars and trucks preferred to see "medium trucks" range from 7000 to 11,499 lb. g.v.w.

The more liberal range now under consideration had the approval of all other manufacturers.

The change to gross vehicle weight ratings will be in line with the truck industry's conviction that tonnage ratings are meaningless and should be dropped.

If the change is made by OPM it will very likely be announced at the

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WASHINGTON RUNAROUND

time the February truck production rate is made public.

Private Trucks Excluded

P-22, the OPM order granting an A-10 priority on repair parts and supplies, has been amended again, the second time since last we went to press. The amending has been at the expense of many private truck operators.

The original order included private truck operations. The first amendment excluded private trucks from the "Carrier" classification, and the second amendment preserved the exclusion. As P-22 now reads the only truck operators entitled to the A-10 priority on repair parts are common and contract carriers. Of course any truck operator serving a defense projest can get a priority even better than A-10 by taking his case to the regional office of the OPM.

Confusion Compounded

The P-22 order is gradually acquiring a reputation as one of the most inept orders dictated by OPM. Men at OPM most concerned with it have actually differed as to its intent. One interpretation advanced by a key man was that the original order was not intended to cover materials needed for the repair of trucks; that it was meant to cover only the materials needed to keep terminals and garages in repair. Another key man interpreted it as the truck industry generally interpreted it, i.e., that it covered truck parts. A clarification was promised when the differences were uncovered, but the first amendment did nothing more with regard to the "Carrier" classification than eliminate private trucks.

P-22 is a very confusing document and if it isn't superseded by the OPM's proposed direct allocation program, it should be revised and clarified so that it can be understood.

One last word on this subject: There are those in OPM who think that an A-10 priority is not needed for truck parts. They argue that the A-3 priority accorded parts manufacturers should make available all the parts that are necessary. This naive faith in the value of a priority is one which many manufacturers do not share.

Allocation on the Way

OPM is working on a direct allocation program to take the place of priorities and the program is certain to be inaugurated next year. The job is a stupendous one but if it does away with the inequities of the priority system it will be worth the time and effort expended. One hope is that it will do away with hoarding and stop the ear-marking and storing of materials by the military for future use.

Military Challenge

A wholesome development that is the subject of favorable comment is the growing tendency, as we understand it, of OPM to challenge the military on the use of critical and strategic materials. Traditionally the best has been none too good for the military. In the absence of restraints the military consequently has been profligate in its use of vital materials. Aluminum for water pitchers and monel-metal for sinks are merely examples of profligacy with which the civilian mind can readily cope. There are other examples and it will be good for the military to be put on its mettle.

Army & Lease-Lend Trucks

There are reports that the Government will ask for another 200,000 trucks of all kinds to be built next year for the Army and the Lease-Lend program. The demand for trucks above 3-ton rated capacity is expected to be such as to tax the industry's manufacturing capacity.

Civilian Pinch Coming?

Washington wiseacres who consider themselves realists take the pes-

---

CCJ QUIZ

by ROBERT F. BAHL

Do you have a priority on up-to-date truck knowledge? Try these quiz questions and find out. You rate AA if you get them all right. Nine right is worth an A-1-a. Eight correct merits an A-3. Seven correct gets A-10. If you get only six right you drop out of the select class with a B-1. Five or less . . . we can't give you higher than a B-8, which, frankly, isn't too good. No preference certificate is needed to get the correct answers.

(Correct answers on page 64)

1

Among the many rigid specifications required of a truck before the Army will accept it is one that requires the truck, with full load, to be able to go up a grade of.....

a. 20 to 25%
b. 40 to 45%
c. 60 to 65%
d. 80 to 85%

2

All of these answers seem crazy, but one of them is right, so take your choice. A recent innovation by a well-known trucker is the use of .....

a. Bicycles for house-to-house deliveries.
b. A fleet of horse-drawn wagons on downtown Chicago routes.
c. Specially built trucks for hauling grasshoppers.
d. Blimp service over the Rocky Mountains.

3

The Burma Road is the lifeline of China —and trucks are the lifeline of the Burma Road. Trucks operating on that strategic road now total approximately.....

a. 500
b. 1000
c. 3000
d. 12,000

4

Maybe it's expecting too much to ask anyone to decipher all the order numbers, form numbers, and such coming from Washington on priorities, but there is a possibility that you may be familiar with order No. P-54, because it.....

a. Limits the number and kinds of trucks and allied products which may be made in any quarter-year period.
b. It gives priority ratings to the construction and maintenance of highways.
c. It extends a rating of A-3 for material going into truck production.
d. It gives a preference rating of A-10 for repairs and maintenance of motor trucks and garages.

5

The famous Pennsylvania Turnpike re-

simistic view that beginning with March or April civilian truck users will be "hanging on the ropes." So far there has been no loud squawking about the difficulty of getting trucks or parts. Anticipation and inventories have helped solve the problem. But a serious situation is said to be developing, particularly with regard to replacement parts. An interested group is trying to have a 90-day truce declared on parts production limitation during which manufacturers could make parts to the limit of their productive capacity. It is doubtful if OPM will permit the establishment of such a precedent regardless of the merit of the idea as it concerns the automotive industry.

Private Operators Act

The discrimination against private trucks in the P-22 amended order and in the Ickes restriction order when there was supposed to be a gasoline shortage on the East Coast, has aroused the National Council of Private Motor Truck Owners to action. There is fear that if allocation of new trucks among civilian users should come the private carriers would again suffer. On the basis of a resolution adopted by its directors, the Council is urging official quarters to take the ceiling off the production of replacement parts for all types of trucks, that all types of trucks and replacement parts therefore be accorded an A-3 priority as to production; that the priority for acquisition of parts by users be as high as the priority for production, i.e., A-3 instead of A-10, and that parts and vehicles become available to all users on the same basis.

Central Committee Acts

The Central Motor Transportation Committee met Nov. 19 and authorized country-wide investigation of shortages in replacement parts through its 16 regional committees; announced completion of a Preventive Maintenance Primer for use by small truck owners, and adopted a resolution recommending to OPM that private operators be included in the P-22 repair parts order, and that the priority be raised from A-10 to A-3. One hundred thousand copies of the Primer will be printed and will sell for about five or ten cents, after a further revision as to form has been completed.

A Batch of Briefs

A warning has gone out to manufacturers that shortly copper will not be available for radiators. . . . Medium and heavy truck, body, trailer and parts production restriction and A-3 priority orders have been extend-

(Turn to Page 118, Please)

. . . a special selection made by the editors . . . to get your copy, just check the letter on the post card between pages 106 and 107 which corresponds with the item you desire and mail to Commercial Car Journal, Philadelphia.

Bearing Replacement Data

S K F Industries, Inc., has just released a catalog entitled "S K F Service Replacement Data 1941 Trucks and Buses." As its name implies, this catalog lists bearing locations, makes and numbers of all models of trucks and buses segregated by manufacturers. Check "A" on the postcard.

Air Brake Bulletin

The three Wagner air brake systems are described and illustrated in this 28-page bulletin. These include the Hydrair brake, the air-hydraulic brake and the straight air brake. Numerous cutaways and drawings clearly outline the mechanism and operation of the three brakes. Check "B" on the postcard.

Clutch Service Manual

This descriptive manual relates to Borg-Warner clutch assembly and service. Its 42 pages are packed with assembly procedure and adjustment data. Profusely illustrated with photographs and drawings, clutch mechanism is shown from every angle and in operating and non-operating positions. Photos illustrate right and wrong adjustments. Clutch pedal settings for different make cars are illustrated. Check "C" on the postcard.

Gas Tank Brochure

Gas tanks for tractors, purported to be absolutely safe are illustrated in this brochure issued by the American Safety Tank Co. Tank construction and complete specifications, including prices are given for tanks with capacities ranging from 24 to 54 gal. Check "D" on the postcard.

---

cently celebrated its first birthday. Traffic figures for the first year disclosed that the ratio of trucks to passenger cars was .....

a. 1 to 9
b. 1 to 20
c. 1 to 31
d. 1 to 59

6

The Central Motor Transportation Committee, which is the government's fact finding and advisory body on truck problems during the emergency, is headed by John L. Rogers, who is also a member of .....

a. American Trucking Associations.
b. Interstate Commerce Commission.
c. Diamond T Motor Car Co.
d. Odd Fellows of America.

7

Those new red, white, and blue shields furnished by Dodge dealers to truck operators read .....

a. "This Truck Hauls Defense Materials."
b. "Hell with Hitler."
c. "All Out for Uncle Sam."
d. "When My Country Calls, I'm Ready."

8

The motor truck plants are giving over more of their production facilities to defense projects every day. In the first six months of 1941, before defense projects got into full swing, the percentage of production given over to defense purposes was .....

a. 10%
b. 36%
c. 60%
d. 82%

9

If you'll just think a bit, you can't go wrong on this one. The quarter-year periods when storage battery sales are heaviest are .....

a. first quarter
b. second quarter
c. third quarter
d. fourth quarter

10

Increasing amounts of rubber are now reaching America from Liberia, reducing our dependency on the East Indies as our sole source of this vital material. Liberia, you know, is .....

a. A Negro republic set up under United States patronage.
b. A part of French Equatorial Africa, controlled by the Free French.
c. A Portuguese island in the South Atlantic.
d. The name applied to the interior section of Brazil.

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W. J. Cumming

TRAINING FLEET MECHANICS

One fleet's practical plan for making men into mechanics to meet any shortage of skilled shop personnel

by WILLIAM J. CUMMING
Automotive Engineer, Surface Transportation Corp., N. Y.

MASS training and group instruction of large classes of individuals unfamiliar with mechanical procedures was used with success during the first World War when an acute shortage of trained mechanics prevailed. The situation today, expanded far beyond that of 1917, is even more critical.

Following the first war, many who had participated in group training experiments, continued to make use of a number of the methods discovered during the emergency period. One excellent reason a few of the methods outlived the war period became obvious later; they proved exceptional in building morale and were adaptable to practically all industrial activity, large or small.

The fine morale building qualities of the post-war scheme were due to a few simple rules found useful in assembling any working personnel. There were only three (3) rules, and although they were incidental to the program as a whole, they succeeded in transmitting to workmen an excellent state of mind. Every worker joining an organization, started from a common level, was trained in an identical manner and was assured of advancement according to opportunity and ability to learn. Beyond a generally contented personnel, the employer derived a further benefit in the problem of selection, for this process became merely a matter of picking individuals with proper moral standards and a desire to work.

As far as the mechanical training features were concerned, the mass instruction plan was identical to the modified scheme, and developed into four (4) distinct steps or phases. A working outline of the four steps of the mass plan was as follows:

1. Preliminary instruction of entire working group.
2. Division into small groups, selected according to ability.
3. Training of small groups by working instructors.
4. Advance instruction for supervisory force and working instructors.

In order to outline the details of such a plan, the descriptions that follow will cover instruction in practices common to automotive vehicle maintenance.

1. Preliminary Instruction

Engineering service organizations of all vehicle or parts manufacturers have thoroughly trained representatives capable of instructing preliminary classes and assisting in developing working instructor forces. The earnest cooperation of this group can be obtained on request and without cost. Missionary work of this nature is in line with the general policy of manufacturers who wish to obtain the finest maintenance possible for their equipment.

Step One provides for elementary instruction for the entire class in the functions of each unit or assembly of the automotive transportation vehicle, including prime mover, transmission, final drive, running gear and body. The list for a bus organization maintaining diesel electric vehicles, would appear as, diesel engine injection equipment, electric transmission (power generator and power motor), axles (front and rear), brakes, chassis and running gear, tires, body and accessories.

The initial instruction, although elementary, should be presented by a competent person, for the group, while generally unfamiliar with mechanics and mechanical devices, will possess many keen minds eager to learn and all queries will require

correct answers. The entire preliminary program should be presented in *simple terms*, in order to avoid discouraging those of the group who will find the whole subject difficult to grasp.

The most simple mechanical devices should be presented to the group first, and as the classes continue to the more complicated subjects, an effort should be made to grade the group. The class will contain all types of mind, and some individuals will not progress beyond the first few problems. However, all types will be required for the working organization, and there need be no pressure exerted to teach more than each man can absorb.

The form in which information is to be presented should depend upon the unit or assembly to be discussed. In all cases the unit under discussion and its main component parts should be displayed in such a manner that the entire group can touch them and handle them as freely as they desire. For some of the more complicated units, in which the mechanical functions are obscure or concealed, cut-away models are usually available from the manufacturer. He has them prepared for advertising or educational purposes, and will gladly loan them upon request. Models for the common and ordinary subjects usually can be found in a convenient size to handle, in any automotive parts stock.

Some part of the instruction may take the form of practical or operating demonstrations of devices, accompanied by oral instruction, and others may be almost wholly oral instruction followed by an explanation of the functions of each part of the whole device. In all cases the unit under discussion, or a model or mock-up, should be displayed for inspection and handling by the group.

An excellent example of a subject to start the preliminary instruction is the tapered roller bearing, found in a cross section of all automotive vehicles. The subject can be presented as a prepared discussion, accompanied by a display of a variety of bearing sizes, and a demonstration of a number of applications common to automotive practice. Instruction in the care and maintenance of bearings can be accompanied by a display of bearing failures, caused by faulty adjustment both tight and loose, by replacing a cup over a worn cone, by replacing a cup in a worn-out hole or replacing bearings in housings or hubs that were not thoroughly cleaned. Demonstrations may follow showing the approved method for adjusting wheel bearings and knuckle bearings and the type of adjustments necessary for axles and transmissions. Instruction should also be given in general lubrication requirements and specifications. Above all, there should be a sufficient variety in the failures presented to impress the students with the necessity for careful workmanship and attention to detail. Since the tapered roller bearing is adjustable, it provides an excellent example with which to impress the novice with the necessity for accuracy.

A more complicated subject for preliminary instruction, is brakes and brake adjustment. This session should begin with the removal of the wheels and brake drums from a number of vehicles, preferably those with brakes in an unsatisfactory operating condition. The reason for the unsatisfactory brakes should be called to the students' attention in each case, and a demonstration made of the adjustments or replacements necessary to rectify the faulty condition.

The important points to consider in the maintenance of all types of

(Turn to Page 58, Please)

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Shown discussing traffic problems in an animated session of the Street and Highway Traffic Section are (L. to R.): George W. Barton, Sgt. C. F. Van Blankensteyn, S. J. Williams, L. S. Harris and Judge J. Gutknecht of Chicago

FLEETMEN FACE SAFETY PROBLEMS

Health supervision and safety training are top topics at Chicago Congress as emergency matters give cause for pause

by RANDALL R. HOWARD

Beginning here is the report of the Commercial Vehicle Section of the 30th Annual Safety Congress held in Chicago Oct. 6-9 under the auspices of the National Safety Council. Among the reports delivered at the meetings and printed in the following pages are: "Fifth Wheel Location," "Facts from Physical Exams," "Servicing a Scattered Fleet," "Working Limits for Better Brakes"

WHAT practical things can fleet operators do, during the present defense emergency when transportation facilities are being pressed to the limit, to lessen operating delays and losses to their vehicles from avoidable accidents?

This was the important question considered by several hundred fleet safety and personnel directors during the nine get-together sessions of the Commercial Vehicle Section of the National Safety Council, held Oct. 6 to 9 at the Stevens Hotel in Chicago, as a part of the gigantic 30th Annual Safety Congress and Exposition which drew about 10,000 delegates from all states and a number of foreign countries.

The Program Committee of the Commercial Vehicle Section, with W. F. Brown of the Consolidated Edison Co. of N. Y., Inc., as chairman, had outlined five general program topics for group consideration. But it soon became evident that the one topic in which the assembled Safety and Personnel Directors were most interested was the health supervision and the safety training of their drivers.

This came out dramatically during the first afternoon session to consider the general topic of "Testing the Driver," when the speakers on the two special subjects, "The Doctor Looks Him Over" and "A Practical Road Test Plan," were besieged with questions which continued long after the session had officially concluded. Another closely related session topic was "Driver Education and Accident Research." Still another session, not originally scheduled on the official program, was added during the last afternoon to show moving pictures which had been developed by Jack Lewis, Safety Director of the Silver Fleet of Louisville, Ky., to train his drivers in the control of fire hazards, and to prevent injuries to themselves and property losses from the handling of freight. Driver welfare and training also was much emphasized in the three additional session topics —"Commercial Vehicle and Defense," "Commercial Vehicle Maintenance Problems," and "Safe Loading and Safe Routing."

J. W. Lord, Safety Engineer of the Atlantic Refining Co., Philadelphia, and General Chairman of the Commercial Vehicle Section of the N.S.C.,

(TURN TO PAGE 84, PLEASE)

D. K. Wilson

By placing the fifth wheel 15 in. ahead of the rear axle (approximately one inch in 10 for a 153-in. wheelbase tractor) an ideal load distribution of 18-38-44 was obtained on this pole-type semi operated by N. Y. Power & Light

FIFTH WHEEL LOCATION

Operator's experience proves strong argument for placing fifth wheel ahead of rear axle for better load distribution

by DONALD K. WILSON

Supt. Auto. Equipment, N. Y. Power & Light Corp., Albany

***This article is an excerpt from a paper read by Mr. Wilson at the Commercial Vehicle Section meeting in Chicago of the National Safety Congress. It is presented because it provides first hand experience from a reliable source to substantiate the correctness of the methods of locating the fifth wheel described in an article by Fred B. Lautzenhiser in the July issue of* COMMERCIAL CAR JOURNAL.**

WHAT is correct load distribution?

Assuming a given wheelbase and a given C.A. dimension, the load center should be located at the same point, whether we are considering a four-wheel truck, a six-wheel rigid truck or a six-wheel articulated truck. This was the major premise of a paper read by Mr. Fred Lautzenhiser at the 1941 Summer Meeting of the SAE. (Reprinted in the July, 1941, issue of COMMERCIAL CAR JOURNAL.)

In considering equipment already in service and operating practices as they now exist, we cannot forget new equipment. We will still be able to occasionally purchase a new self-propelled vehicle that runs on tires rather than caterpillar treads, or a trailer to carry something other than a field piece—I hope. Consideration of good load distribution begins, or should begin, before a truck is purchased. Let us for the moment assume that we are about to purchase a new tractor and trailer, and that we are interested in attaining good load distribution. Locating the load center as previously mentioned means that the king pin should be placed at least one inch ahead of the tractor rear axle for each 10 in. of tractor wheelbase. Assuming a reasonable distribution of load within the body, we then approach a 20-40-40 gross weight distribution on the three axles. The tire loads are perfectly distributed. There cannot be much question but what this represents good theoretical load distribution.

But, here the operator who is contemplating the purchase of new equipment is faced with his first problem. A sizeable percentage of tractors on the road today are of 130 to 140-in. wheelbase, with a C.A. dimension of 60 in. For the sake of a concrete example, let us say that we wish to purchase a tractor of these dimensions. As we have already seen, the king pin location should be 13 in. to 14 in. ahead of the rear axle. With a 60 in. C.A., such a king pin location is impossible. What to do now? If the

(TURN TO PAGE 67, PLEASE)

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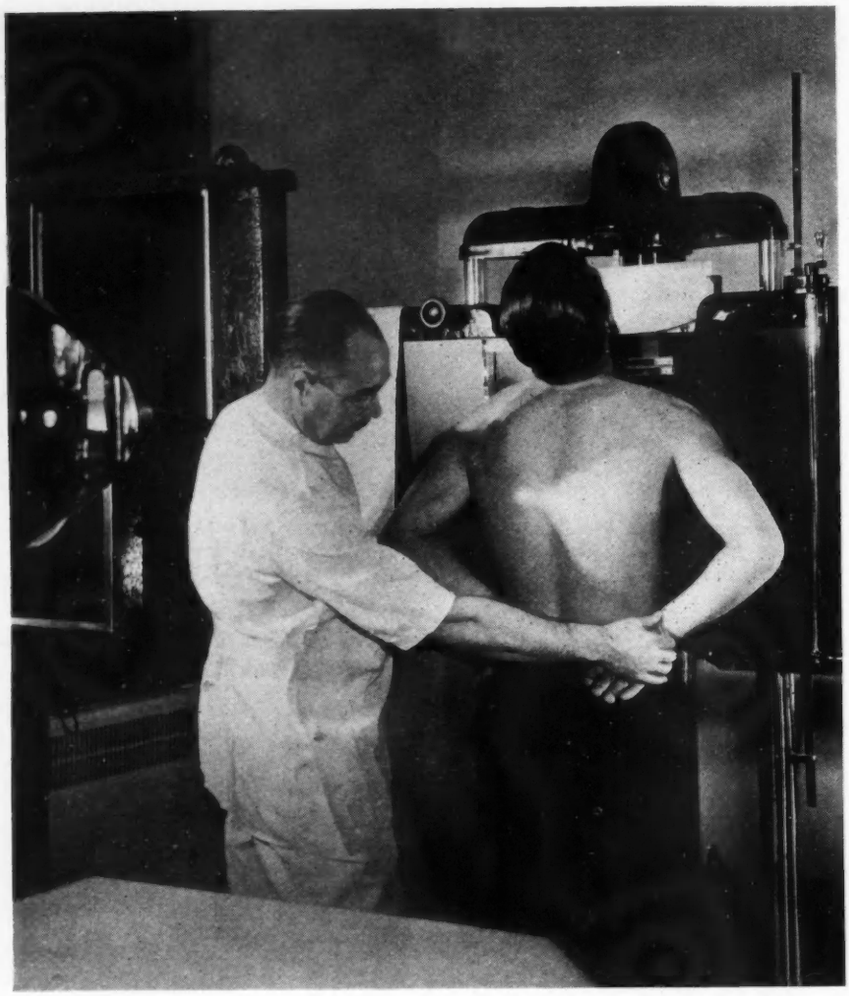


FACTS FROM PHYSICAL EXAMS

Unsuspected ailments revealed among drivers can be corrected to improve efficiency and pay-off in fewer accidents

by W. E. MISHLER, M.D.
Chief Surgeon, U. S. Truck Lines, Inc., of Delaware

Dr. W. E. Mishler

SINCE 1935 the U. S. Truck Line companies have maintained a program of physical examinations for employes and applicants for employment. The full benefits of this program, of course, are impossible to estimate. We feel certain that a consideration of some of the results that we shall describe will leave little doubt in the mind of anyone concerning the advantages and benefits of such a program.

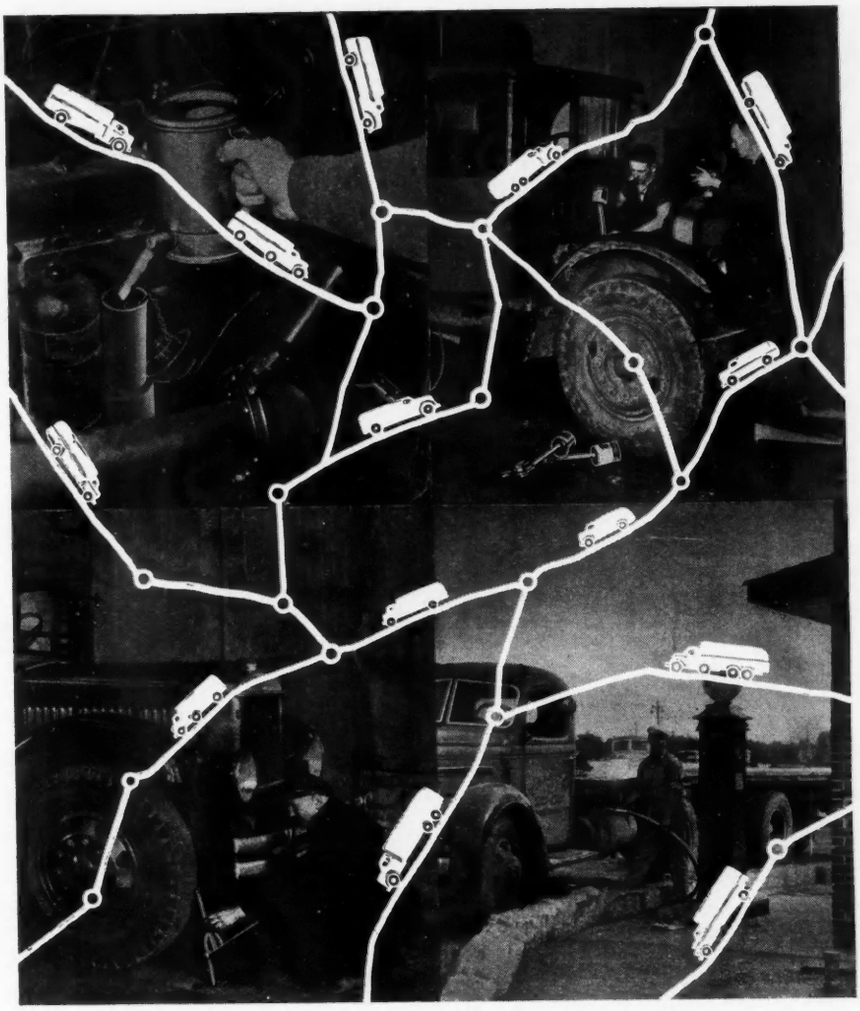
Results have been gratifying from four viewpoints: First, the company has profited through the prevention of accidents and injuries which might have been caused by physically defective employes; secondly, applicants for employment who were physically incapable of handling the jobs for which they were applying have been prevented from doing work which might have been detrimental to their health, or resulted in injury; third, employes who have submitted to an annual physical examination have cooperated in the correction of defects which have arisen from year to year and have thereby prolonged their period of gainful employment, safeguarded their health, and, perhaps, their lives; finally, since our companies are engaged in transportation, the public interest has been protected in keeping off the roads and highways truck drivers who, because of their physical condition, are a menace to public safety.

We are informed by the safety department of U. S. Truck Lines that the company's accident record has greatly and consistently improved since the physical examination program has begun and we like to feel that these examinations have played an important part in the improvement of our safety record.

Because of the widespread nature of our operations, company surgeons are appointed in each city or town where men are employed by our companies. Men are sent to the local company doctor by the local agent or manager and each man carries

(Turn to Page 74, Please)

H. O. Mathews



SERVICING A SCATTERED FLEET

Reliable dealer repair and unit exchange, uniformity in grade of fuel used and in oil changes aid effective remote control

by H. O. MATHEWS

Auto. Engineer, Public Utility Engineering & Service Corp., Chicago

THE control of maintenance of a scattered fleet starts with the selection of equipment. To me this seems to be most important when considering the problems involved in a scattered fleet as compared to those in a fleet located in large operating headquarters.

One of the most important considerations should be that of dealer representation as it is becoming more necessary to depend upon the dealer in the isolated location for rather complete maintenance of the vehicle. The manufacturer of the equipment selected should have dealer representation in all of the locations in which the equipment will be used. These dealers should have well equipped service stations and should train their personnel in the problems of maintenance so that their individual customers as well as the fleet owner will be satisfied. This has been a major problem in the maintenance of a scattered fleet and the manufacturers have made a great deal of improvement during the past few years. Much remains to be done, and it is my feeling that the fleet owners' influence will result in further improvements in dealer service.

The specifications of the equipment of a scattered fleet should be carefully scrutinized so that the maximum life will be obtained from all of the working parts. Too many operators purchase equipment with insufficient engine size and, consequently, are confronted with the engine maintenance problem. In these days of expensive labor there can be no substitute for horsepower. I believe that a discussion with the army engineers who were associated with the recent movements of troops over the mountain ranges of the West Coast would corroborate this statement. They found that many of the vehicles were under-powered and the movement of equipment in the high altitudes was retarded due to the engine sizes.

The brake area is another important factor in the selection of equipment. There is a large variation in

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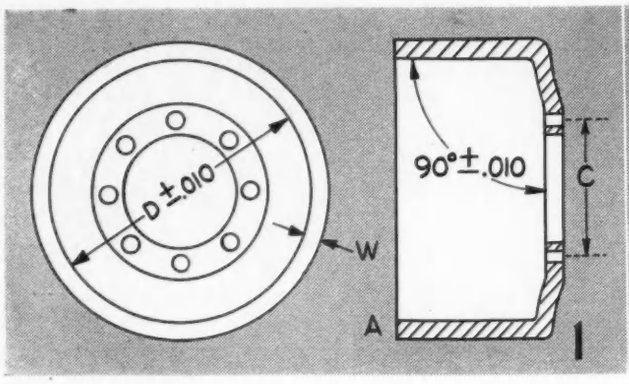
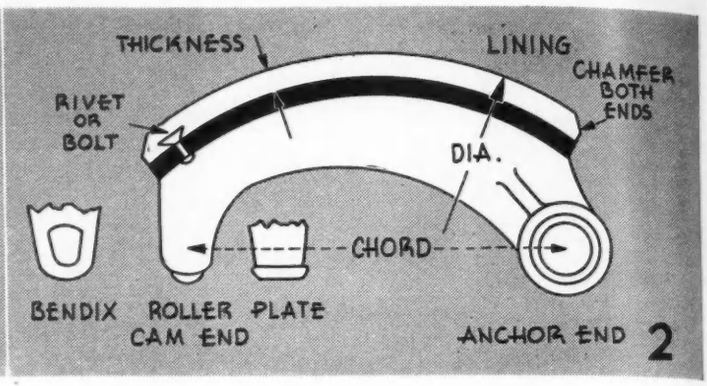




WORKING LIMITS FOR

Practical pointers on when to repair or replace operated brakes—with other maintenance tips • •

NOTE: Text and drawings correspond as to numbers and reference letters.
(For specific information on each brake or control system, the local representative or manufacturer should be consulted.)

1. BRAKE DRUMS

The brake drum surface is one of the two most important elements of the foundation brake. The other important one is the brake lining surface which is of course renewed at each reline. But the drums are usually not renewed and therefore their surfaces must be accurately inspected if the best performance is to be expected after relining. Recommendations are as follows:

W: Do not cut drum wall more than 1/32 in. on cars and light trucks; more than 1/16 in. on heavy trucks and buses. Drums should be discarded if deflection in diameter is more than .060 in. under full brake application.

D: Diameter should be concentric with hub within .010 in.

(A) Surface: Refinish if worn or scored more than .010 in. or if heat checked.

(b) Taper: Refinish if tapered or "bell-mouth" more than .010 in.

(C) Hub bolts must be tight. Diameter of bolt circle should be as large as possible for rigid support.

Equipment: For Inspection

Drum gauge: With micrometer setting, or arc gauges for measuring arc-diameter and concentricity.

Equipment: For Servicing

Drum lathe: Should have cutting tool for rough cut and grinding wheel for finish cut. Drums that have "hard spots" on the surface must be ground, as the cutting tool skips over these spots. Finished surface must be smooth and clean.

2. BRAKE SHOE AND LINING

The inspection and fitting of brake shoes to their supports is very important at relining; the use of the correct thickness lining and the fitting of the lining and drum are closely correlated and must be thoroughly done if the brakes are to perform correctly after being relined. After brake drums are serviced, brake shoe procedure is as follows:

Lining

Thickness: Reline with standard thickness unless drum is refinished or worn. Then use oversize lining to compensate for the amount of drum material removed. If drum is finished 1/16 in. larger in diameter this means 1/32 in. removed from each wall and new lining should be 1/32 in. oversize (or use 1/32 in. shim).

If drum is finished ⅛ in. larger in diameter then this means 1/16 in. has been removed from each wall and new lining should be 1/16 in. oversize.

Rivet or bolts: Must be fastened securely so that no air spaces are left between lining and shoe.

Chamfer: Lining ends at both ends of shoe. If two pieces of lining are used per shoe, chamfering is not necessary at the center of the shoe.

Cam ends: Inspect these thoroughly. Bendix shoes should be repaired (or discarded if this is not possible), if the cam end is worn or bent and if the anchor pin eye is worn at the small radius.

Rollers: Should be removed and the shaft well lubricated. Discard rollers that are worn, particularly if a flat spot is present on outside. Plates should be discarded if grooved by the cam more than .015 in. These plates should be shimmed to set cam back to flat position.

Bushing

Anchor bushings should be replaced if worn more than .008 in. Anchors should be fitted and bushings accurately reamed. Make certain that anchors and bushings have correct lubrication.

Fittings and the grooves and holes provided line up accurately so greasing may be properly done every 1000 miles. Be sure to use a grease that will not run when hot and will not cake.

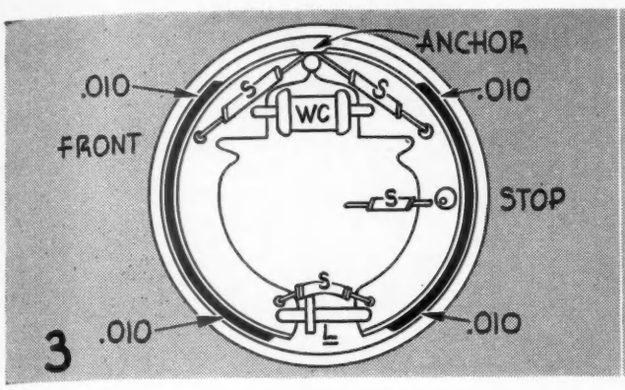
Chord of Shoe

The rigid heavy shoes usually maintain their original chord length, but some shoes are flexible and become larger in arc as lining wears.

These shoes must be brought back to their original dimensions so they will fit their supports and in turn be held in the correct position in the brake. Expanded shoes that are not corrected will have too much toe and heel, or too much center contact with the drum, even though the correct thickness lining is used.

Eventually the lining will wear to fit the drum but brake performance will be impaired unless original fit is correct.

Make certain that drum and lining con-



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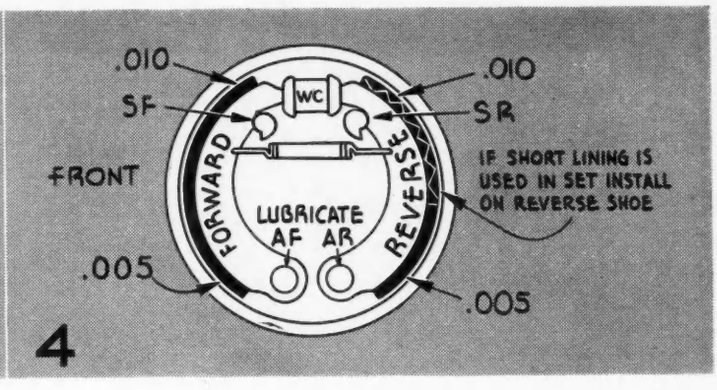

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BETTER BRAKES

parts of Lockheed, Huck, Bendix and two-shoe cam

• • • • by J. DONALD ROACH, Sales Engineer, U. S. Asbestos Div., Raybestos-Manhattan, Inc.

tact is as near perfect as possible before installing the drums. Shoes may be fitted by re-arcing, or the lining surface itself may be ground to fit the drum.

3. THE BENDIX BRAKE

Bendix brakes have two internal shoes connected together at one end by an articulating link. These shoes are held in place in the "off" position by an anchor bracket, having either an individual anchor pin for each shoe, or one anchor pin common to both.

The shoes are actuated by a cam block in the mechanical type, or an internal wheel cylinder in the hydraulic type. Either method expands the shoes and the operation is as follows:

The primary shoe leaves its anchor and moves out against the drum. The secondary shoe, due to greater pull back spring pressure, is kept against its anchor. The revolving drum then moves the primary shoe which in turn moves the secondary shoe out into the drum. The secondary shoe is anchored and as increasing pedal pressure is applied, the primary shoe, being energized by the revolving drum, transmits this pressure through the articulating link to the secondary shoe. The rate of wear is therefore greater on the secondary shoe lining. Some manufacturers tend to equalize this by using a combination set of linings, or using a shorter piece on the primary shoe, or both methods are employed. For proper adjustment:

Anchor—Must be adjusted at each reline and at intervals to maintain correct clearances at anchor ends of shoes as lining wears.

L-link—Controls clearance between lining and drum at adjuster end of shoes.

Stop—Keeps shoes centered in drum when brakes are off. Stop may be in another position or may not be present.

S—Springs should be renewed if weak. The weight of these springs is important and should be checked at each reline, according to manufacturer's specifications.

WC—Dismantle and examine at every reline, or if leaks are present. Renew pistons if scored, sticking, or worn more than .005 in. Replace cylinders if scored or if "no go gage" will enter. Replace rubber cups.

4. THE LOCKHEED BRAKE

Lockheed brakes have two internal shoes. Each mounted on an eccentric anchor pin and expanded by a hydraulic wheel cylinder. The shoes are actuated by the wheel cylinder which converts the hydraulic pressure in the lines into a mechanical force through the medium of the wheel cylinder pistons.

Both forward and reverse shoes move out into the drum at the same time; the axis of each being their anchors. As the pedal is further depressed the shoes are expanded with the force dependent upon the area of their respective pistons. The revolving drum partially energizes the forward shoe, the amount depending upon the geometry of the particular brake, but the reverse shoe is not energized. Therefore, since the rate of wear is greater on the forward shoe lining, some manufacturers attempt equalization by lining the reverse shoe with a shorter piece; or by using a step bore wheel cylinder with the larger bore expanding the reverse shoe; or by using combination linings; or all those methods. Other manufacturers consider the equalization of lining wear between the two shoes of lesser importance, using a step bore wheel cylinder with the large bore expanding the forward shoe to gain greater deceleration. But generally these brakes have the forward shoe lined with a rugged material.

AF and AR—Must be adjusted at each reline. Since the shoes fulcrum on these anchors, the fit of the lining to drum and correct proportionate clearances are all maintained by this setting. Renew anchor pins and shoe bushings if worn more than .008 in.

WC—Dismantle and examine at every reline or if leaks are present. Renew pistons if scored, sticking, or worn more than .005 in. Replace cylinders if scored or if "no go gage" will enter. Replace rubber cups.

SF and SR—These shoe stops restrict the "off" movement of the brake shoes thereby keeping down to a minimum the displacement of brake fluid necessary for application. They also maintain the clearances after the anchors *AF* and *AR* are correctly set. (Turn to Next Page)

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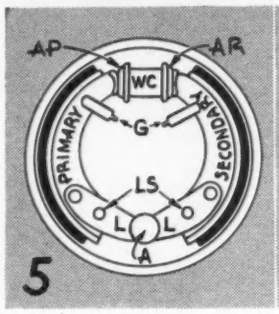
WORKING LIMITS FOR BETTER BRAKES



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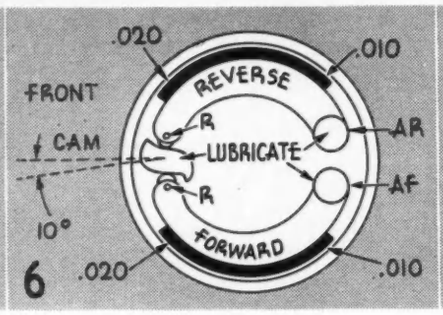

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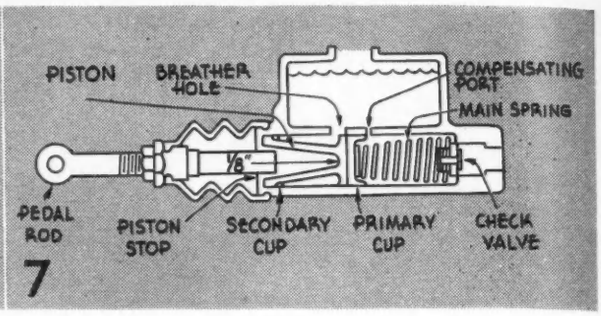

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Spring—Check pull back spring at each wheel inspection. Renew if weak.

5. HUCK (G.M.C. BRAKE)

The Huck brake used on some General Motors and all Chevrolets, consists of two shoes, each held in position by an articulating link. Both links are fastened to the backing plate or brake spider by an anchor pin. The shoes are expanded by an internal hydraulic wheel cylinder on late types by a mechanical cam in earlier models.

Due to the design of the articulating links the angle of support allows the revolving drum to energize both shoes.

The metal wheen cylinder boot is threaded and acts as the adjuster shoe stop. The hydraulic type is shown:

AP and AR—Control lining to drum clearance at their respective shoes.

WC—Dismantle and examine wheel cylinder at each reline or if leaks are present. Renew pistons if scored, sticking, or worn more than .005 in. Replace cylinders if scored or if "no go gage" will enter. Renew rubber cups.

A—Anchor pin is non-adjustable type and shoes require no manual setting as they assume correct position as brakes are applied. Renew anchor if worn more than .008 in.

L—Articulating links must be rigid and hold the shoes without side play. Examine springs and buttons and renew springs if weak.

G—Guides must hold shoes without side play and must be fitted and well lubricated at each reline.

6. INTERNAL TWO-SHOE CAM OPERATED BRAKE

This brake is used by various manufacturers. It consists of two shoes held by rigid anchors and expanded by a mechanical cam of either flat type or S type.

This camshaft may be operated by an air chamber or cylinder; an external hydraulic wheel cylinder; or a vacuum chamber, all mounted directly on the backing plate or brake spider.

Older vehicles sometimes used a mechanical arrangement of rods and levers or cable and conduit as a control with a vacuum or air power cylinder as a booster.

This brake is simple in operation; the shoes are expanded by the cam and fulcrum on their anchor pins.

For efficient operation they must be systematically serviced and well lubricated at points shown below:

AR and AF—Must be adjusted at each reline if eccentric type is used. Renew anchor pins or rebush shoes if worn more than .008 in. If plain type (non-adjustable) is used extra care must be taken to assure correct toe and heel contact.

Cam—May be S type or flat. Where cam movement from flat position is more than 10 deg. for full brake application, correct by installing oversize lining, oversize cam plates or tips. A cam rise greater than 10 deg. will allow cams to go over center before lining is worn out. Camshaft should be renewed and bracket rebushed if worn more than .025 in.

R shoe tips or rollers—Should be replaced if worn. Roller and shaft should be removed and well lubricated as few have grease fittings provided.

Lubrication—Use a grease that maintains a protective film under high temperature.

7. HYDRAULIC SYSTEMS

The hydraulic system is used as a method of expanding brake shoes of various types by the medium of a fluid—master cylinders and wheel cylinders of various types are used.

The Lockheed, Bendix Hydraulic, and GMC Huck employ an internal wheel cylinder mounted in the same plane as the shoes where the hydraulic force is used to expand the shoes directly through the medium of the wheel cylinder piston.

Some internal two shoe, of various makes, some few Bendix cam brakes, and some Timken Duplex four shoe brakes employ an external pencil-type cylinder which actuates a lever and shaft linkage expanding the shoes through the medium of a conventional cam. Additional power beyond the limit of the operator may be used in applying the brakes by adding a vacuum booster or air chamber to the master cylinder lever or push rod.

The line pressure at full brake usually runs about 1000 lb. per sq. in. although some fleets are going as high as 1800 lb. per sq. in. for overloaded vehicles.

The most important part of the hydraulic system is the master cylinder. This should be dismantled and examined at certain periods, about every 25,000 miles in hard service, or if trouble in the system develops. The features of the master cylinder are listed below:

Check valve—This keeps fluid pressure balanced against shoe pull back springs. Pre-loading of lines should be 7½ to 12 lb. per sq. in. line pressure. Renew check valve if either of the seats are worn or misshapen or if small spring is weak or rusty.

Primary and secondary cups—The primary cup seals the system at high pressure and the secondary keeps the fluid from leaking out of the cylinder. Renew cups if distorted or if edges are rounded.

Main spring—Holds check valve against its seat and forces piston back on release stroke. Also keeps primary cup in place. Renew spring if weak.

Piston—Renew if scored or worn more than .005 in. Make certain bypass holes are open.

Piston stop—Keeps piston within cylinder and acts as stop. Piston must *always* come back to this stop when brakes are released.

Pedal rod—Must be adjusted so there is ⅛ in. clearance between pedal rod and piston when brakes are off to insure primary cup clears the compensating port.

Parts to renew—Piston if worn more than .005 in. The check valve, main spring, primary and secondary cups, and protecting boot may be purchased in a repair kit at nominal cost. These parts should be used to replace old ones whenever the master cylinder is dismantled.

Cylinder walls should be honed if scored. Use a "no-go gage" for measurement of cylinder diameter. If after honing enough to remove all scores, the "no go gage" will enter, master cylinder should be replaced.

Brake fluid—Should be renewed when thick or dirty or, at any rate, every 10,000 miles, according to most manufacturers.

Only an approved fluid should be used. One that will flow freely at lowest operating temperatures and will not volatilize or gas at the highest temperature likely to be encountered.

Most manufacturers warn against mixing fluids of different brands or types. When replacing the fluid, flush the system with denatured alcohol.

Shop Equipment Required

Line pressure gage—to check pressure of fluid.

Pressure bleeder—so one man may conveniently bleed the lines.

Cylinder hones—if the necessary hones and bore gages are not available the small fleet may exchange units with the local service representative.

Automotive experts who helped carry the ball at the Cleveland S.A.E. Transportation & Maintenance Meeting last month shown here are: (top l. to r.): T. L. Preble, Supv. Auto. Transp., Tide Water Associated Oil Co.; John L. Rogers, chairman, CMTC; F. K. Glynn, American Telephone & Telegraph Co. Bottom group (l. to r.): F. B. Lautzenhiser, Transportation engineer, IHC; Major General E. B. Gregory, Quartermaster Corps, U. S. Army; Errol Gay, engineer, Ethyl Gas. Corp.

FLEETMEN FIGURE DEFENSE NEEDS

Operators discuss pooling, sizes and weights, engine deposits and measures to solve problems posed by emergency

by HENRY JENNINGS
Technical Editor, Commercial Car Journal

FLEET men are interested in what they can do to contribute to National Defense. There was plenty of evidence of this in the numbers with which they attended the various sessions of the SAE National Transportation and Maintenance Meeting held on Nov. 13 and 14 at Cleveland. All four sessions had a strong National Defense flavor and the banquet was pure National Defense featuring Major General Edmund B. Gregory, Quartermaster General, U. S. Army, as the speaker, and T. L. Preble, vice-president of the SAE Transportation and Maintenance Activity, as toastmaster.

In his speech, "Motor Transportation and National Defense," General Gregory referred to the unusual problems that confront motor transport in wartime and mentioned the Burma Road. He said, "The most serious problem in the operation of the road (Burma) is the maintenance and repair of vehicles. This is caused by a number of factors, chief of which appears to be the drivers. Most of them lack the background in mechanics that is necessary for such work and they take little or no care of their vehicles. They are so eager to save gasoline so they can sell it in the interior for a fancy price that they make a practice of switching off their engines at the top of every hill or mountain and coasting down on the brakes. This practice combined with a tendency to load the trucks to about double the rated tonnage results in a number of vehicles being put out of commission. The Arnstein commission reported than an average of 70 per cent of the vehicles were laid up for repairs at any given time."

Speaking of our own problem, General Gregory said, "The real heart of the military program is the training of personnel. The Army now

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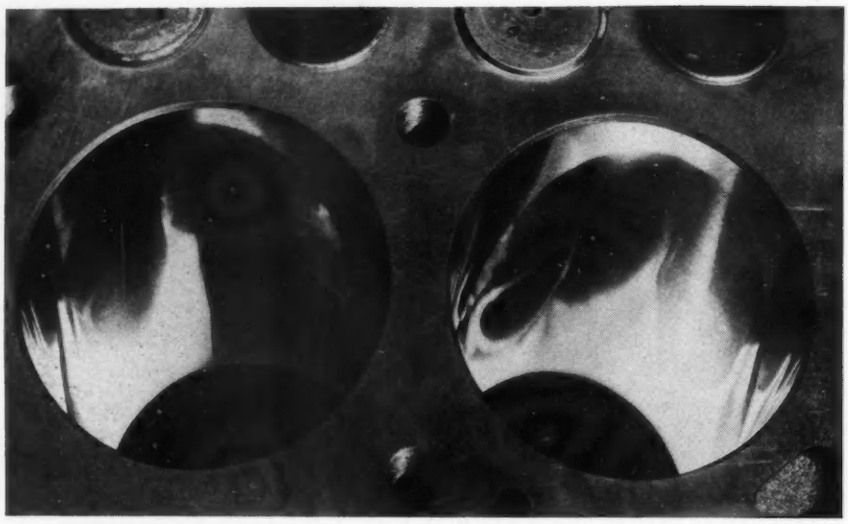


CASE STUDIES OF CHROME PLATING

Experience shows chromed cylinders, crankshafts and parts giving good results with ratios as high as 20:1

by Ellis W. Templin*

Automotive Engineer, Los Angeles Dept. of Water and Power

Ellis W. Templin

A SURVEY has been made by letter contact with nearly one hundred engineers in this country and some foreign countries engaged in motor vehicle maintenance or related work to ascertain to what extent chrome plating is being used.

It was interesting to note that 38 of these men did not answer the letter and 36 answered stating that they knew little or nothing about its use or possibilities. The remainder replied, submitting reports of experiences in varying degrees, some of which are recounted here.

1. J. B. Fisher, Vice President-Chief Engineer, Waukesha Motor Co., Waukesha, Wis.:

"We have run tests in our laboratory with chromium plated sleeves, running the engine in a dust house with no air cleaner and permitting a tremendous amount of dust to enter the cylinders. The rate of wear between a good grade of chrome nickel iron sleeves and chromium plated sleeves is approximately 20:1.

"The actual use of chromium plated sleeves has been retarded by plating companies who can plate them with a uniform coating of chromium at a reasonable price. So far, the cost of chromium plating has been so high that we have not felt it has been practical on truck and tractor engines due to the sharp increase in cost entailed."

2. W. G. Piwonka, Superintendent of Equipment, Cleveland Railway Co., Cleveland, Ohio:

"Chrome plating used on crankshaft bearings that are scored, water pump shafts, etc.; occasionally on shackle pins, gasoline pump shafts, air tool equipment, and similar special installations.

"This method of extending the life of wearing parts is particularly successful where abrasion and corrosion both occur, as in the presence of moisture or mild acids, and also where high surface hardness is required on articles that is not desired or possible to case harden."

3. Sidney B. Shaw, Automotive Engineer, Pacific Gas and Electric Co., San Francisco, Cal., stated:

"Following is a report on chromium cylinder wall plating covering two jobs with which we heve been experimenting.

"The first mentioned truck (in the following table) being used as a shop tow car has very little mileage but has run under conditions very unfavorable to good cylinder wear. Cylinders No. 2 and 3, in the model A Ford engine operated in start-stop service are usually worn at from two to four times the rate of cylinders No. 1 and 4. These two cylinders (No. 2 and 3) were chromium plated, while cylinders 1 and 4 were refinished in the usual way.

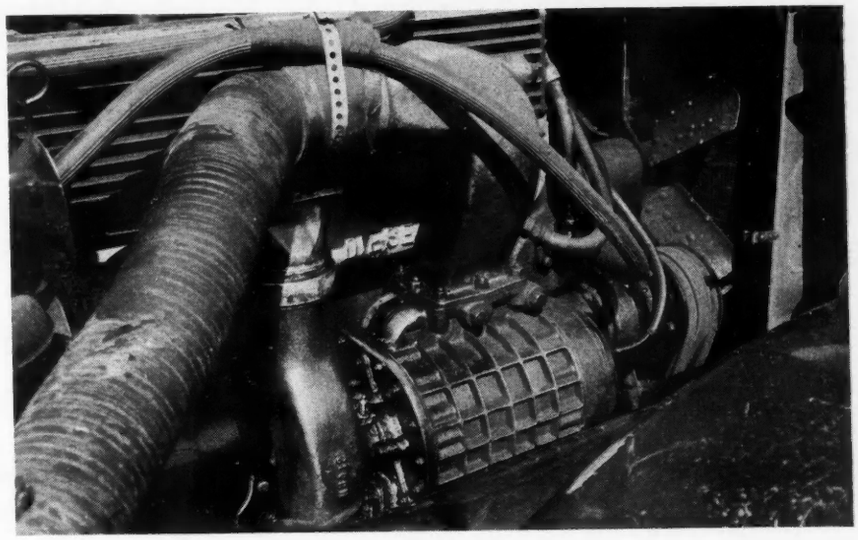
"In the second case of the Ford V-8 engine, which was part of a Schramm-Fordair unit, all of the cylinders were plated in the same

(Turn to Page 118, Please)

*Presented at S.A.E. West Coast Regional Transportation & Maintenance Meeting, San Francisco, Nov. 5-6, 1941.

Editor's Note—Mr. Glade presented this material at the West Coast Regional T & M Meeting of the S.A.E. and relied upon questions from the floor to bring out facts of particular interest to fleetmen. The paper-crowded session prevented a discussion from materializing. So, after the meeting, a COMMERCIAL CAR JOURNAL staff member asked Mr. Glade a number of pertinent questions and received answers which are appended to the formal presentation.

Peter Glade



SUPERCHARGER EXPERIENCE

. . Shows need for increased radiation, redesigned valves, aluminum pistons, correct installation for top economy

by PETER GLADE*
Supt. of Equipment, Purity Stores, Ltd., San Francisco

AFTER going through much operation data and experiences gathered from many users of supercharged diesel motors in highway transport, it was my thought to present in as brief a manner as possible, this short paper to stimulate interest and discussion on superchargers used in highway trucks, and rely on many questions of a practical nature for discussion, which I will answer.

It is my prediction that within a short period of time, particularly in the western states, truck operators who come under the new scientific load and length laws will consider for their newest equipment nothing but supercharged power plants to be able to carry maximum payloads with faster average speeds, due to greater competition and the ever present public hostility to the slowness of equipment on grades.

Some two and a half years ago the need became evident on the Pacific coast for greater horsepower engines for highway truck use, in order to reduce the terminal to terminal time as competition increased, and to obtain a greater amount of working hours from the equipment invested in. The use of supercharged diesel engines showed that possibility and therefore have become well known on the Pacific coast.

The diesel field especially has been benefited by the use of supercharging, for while the output of the supercharged gasoline engine, for the time being, is strictly limited by the octane rating of the fuel, no such restriction affects the diesel engine.

Present problems in automotive diesel supercharging, relative to efficiency and mechanical instability, are approaching a rapid solution and further development will find them used more and more in the near future in truck and bus service. The present supercharger units themselves are extremely satisfactory, and there is every reason to believe they will operate for long periods of time with a very minimum of service work being necessary.

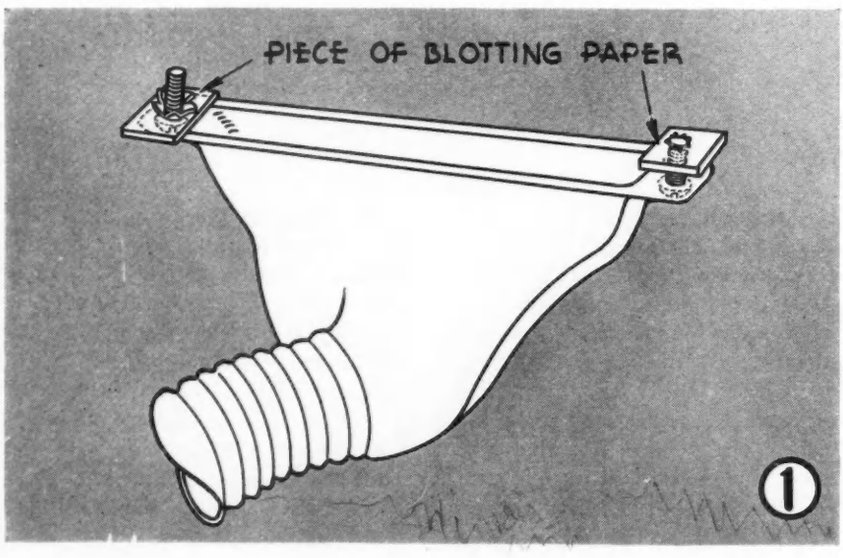
The physical size of the supercharger presents a problem in connection with economical installations in commercial vehicles, but lines of development definitely favor the constant type blower and will have considerable influence on the size and weight of the future vehicle engine.

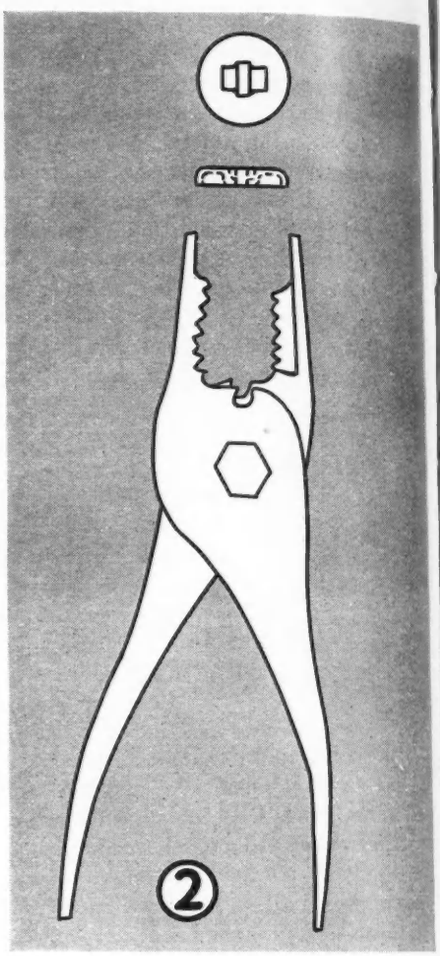
This experience has been with one make of automotive supercharged diesel engine, namely, the Cummins,

(TURN TO PAGE 94, PLEASE)

SHOP HINTS
FROM FLEET SHOPS

Here's a chance for some quick and easy Christmas money. If you are now using an idea that simplifies shop operation or enables you to do a repair job more easily, send this idea in to the editor. Commercial Car Journal will pay $5 for each Shop Hint accepted. Send as many as you have together with a photograph or rough sketch for each. Explain the idea in your own words. CCJ will fix up the drawing and text for publication.





1
Defroster Installation

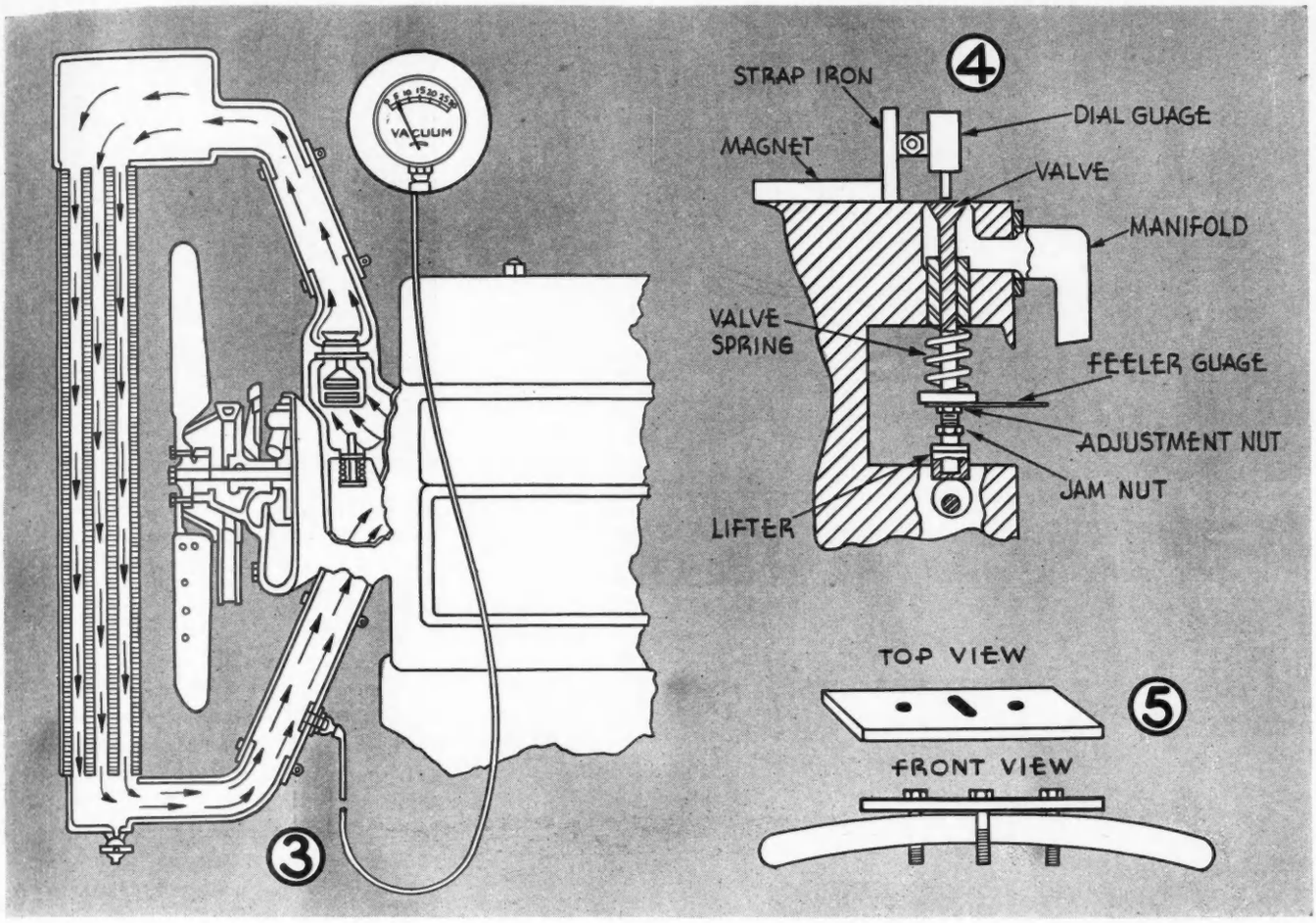
By Stan Lukas
R. H. Erny Co., Philadelphia, Pa.

Defrosters have to be mounted under the instrument board where there is little room and the mechanic at best is in an awkward position. Sometimes it seems impossible to get the screws started. If a piece of blotting paper is placed at the flange and the screw is forced through it, it will hold the screws up so that they can be driven without trouble.

2
Brake Pliers

By Stan Lukas
R. H. Erny Co., Philadelphia, Pa.

It is easy to waste a lot of time at the brake shoe retaining clips when you are trying to remove or install



a brake shoe. With the pair of pliers illustrated the shoe can be removed by a twist of the wrist. The pliers were made from an ordinary good pair of conventional pliers.

3

Radiator Tester

By Louis Fiorelli
Anderson Motor Co., Philadelphia, Pa.

Here is a method that really works for testing clogged radiators. Attach a hose with a vacuum gage to the lower radiator hose and start engine running fairly fast. If the gage reads more than 4 in. the radiator is definitely clogged and cleaner solution is indicated.

Put the cleaner in the radiator and if the vacuum gradually falls off, it indicates that the cleaner is working. If it does not the radiator must be removed for more thorough cleaning.

4

Valve Adjustment

By Morris Kandell, Philadelphia, Pa.

It is possible to save time and get a more accurate adjustment of valves by doing the job when the head is off. Simply mount the dial gage with a horseshoe magnet so that the finger preloaded contacts the valve when closed. Adjust the valve using a gage of greater thickness than you desire clearance. (0.10 is good for .006 or .008) and adjust so that the dial gage reads the difference between the correct clearance and the thickness of the gage.

5

Spring Re-Archer

By E. Sturgeon
CCC Central Repair Shop, Forest, Miss.

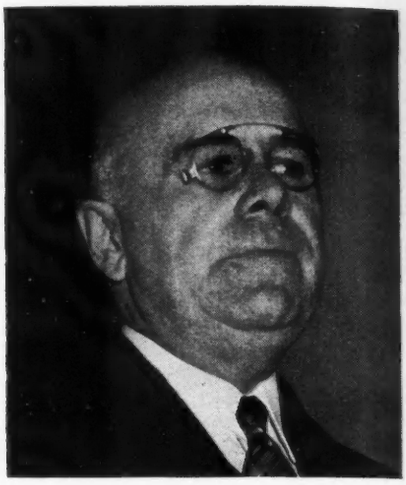
A simple spring re-archer which the writer has used very successfully is made from a piece of 1 x 3 x 10-in. board and three bolts or cap screws ½ x 3 in.

Bore four ½-in. holes in the piece of wood; the two end holes on 5-in. centers, and the two center holes so as to form a slot crosswise of the board. Place three ½-in. bolts in the holes, the two end bolts on one side, and the center bolt on the other side of the spring leaf.

Place re-archer and leaf in a 6-in. vise. The spring should be moved through the device endwise about 1 in. at a time and the pressure applied to the same degree each time.

By placing the main leaf on the bench or a piece of paper, arch of spring leaf can be outlined in chalk or pencil and the exact difference between the old arch and the new ascertained.

This outfit will handle spring leaves up to ¼ in. by 2 in.



Public Roads Administration Commissioner Thos. MacDonald warned "the country faces a transport shortage"

PEACE RULES ATA CONVENTION

1. Harmony prevails at general sessions... Rodgers reelected president

2. Defense and its effect on trucking discussed at operation sessions

3. Editorial: The ATA Brake School

1. Harmony at General Sessions

IN an atmosphere of newspaper and radio reports of sinkings of United States warships and amid the pungent fumes of political warfare incident to a metropolitan mayoralty election, the American Trucking Associations, Inc., held its eighth annual convention in New York City last month with peace reigning throughout all proceedings as it never reigned before. This fact alone was a reassuring indication that the nation's defense effort so far has caused no serious dislocations to truck transportation. Operators were present from all over the union and gave no hint that, up to the present, priorities, production limitations and material shortages were causing them any inconvenience.

Such remarkable harmony prevailed that the annual business session was the shortest in the A.T.A.'s nine-year history. Originally scheduled for morning and afternoon sessions, all business was transacted at one sitting in the space of a couple of hours. The high spot of the business meeting was the reelection of Ted V. Rodgers as president to serve his ninth consecutive term. As in the past the vote, a tribute to his leadership, was unanimous. All other top-ranking officers were reelected with one exception: J. P. Spaenhower replaced Oren H. Scott and thus kept a Californian in the second vice-presidency. H. D. Horton, of North Carolina, is first; H. E. English, of Texas, is third, and C. J. Williams, of Wisconsin, is fourth vice-president. Chester G. Moore, of Illinois, is secretary, and James B. Godfrey, Jr., Michigan, treasurer.

Even the resolutions, which normally precipitate a discussion among delegates, were read, explained and adopted without delay. In addition to complimentary and by-laws resolutions, several inspired by defense developments were passed. Here they are in brief:

"Whereas motor carrier transportation has proven to be the only form of transportation which can meet present-day military requirements on the battlefront and civil needs on the homefront, therefore be it Resolved that the A.T.A. declares itself willing and anxious to cooperate in every way in furtherance of the defense program, and dedicates its facilities and services to the promotion of national defense."

"Whereas due to the national emergency it has become increasingly hard to secure reliable fusees, be it Resolved that the Interstate Commerce Commission be requested to

Jack Garrett Scott, Chief of Law & Enforcement, Bureau of Motor Carriers, warned about leasing practices

Top: New York's Mayor LaGuardia awards trophies to winners in the 1941 National ATA Roadea held in the empire city. Winners are (L. to R.): Bud Vandiver, Colorado-Wyoming Express (tractor-semi-trailer champ); Clarence Maas, McCracken Bros. Motor Freight, Eugene, Ore. (truck and full trailer champ); Charles Goins, Trucking, Inc., Indianapolis (straight truck champ). Above: Grouped about the ATA Safety Trophy are (L. to R.): Joe Fadell, Merchants Fast Motor Fleet, Ft. Worth, Tex.; Ted V. Rodgers, ATA president; L. B. Brown, Red Arrow Fleet, Houston, ATA vice-president; H. E. English, Red Ball Motor Fleet Lines, Dallas; Ed. Sproles, Sproles Motor Fleet Lines, TMTA president

give consideration to a suitable reflector as an alternate safety device along with pot flares and electric lanterns."

"Whereas the National Defense program and increasing civilian requirements necessitate an efficient and well-maintained highway system, and whereas Highway Departments of several states are encountering difficulty in securing needed equipment and materials, therefore be it Resolved that the A.T.A. strongly recommends that all Federal agencies having to do with priority ratings and distribution of essential materials designate a higher preferential rating for materials needed to maintain the highway system in a state of efficiency."

Another resolution voiced A.T.A.'s concurrence in the findings of the I.C.C. size and weight study and supported the enactment of legislation designed to remove trade barriers and unreasonable burdens on interstate commerce, provided "that the Federal Government and the States have concurrent jurisdiction to enforce such rules and regulations as may be prescribed under Federal authority, and provided further that no Federal agency shall be empowered to reduce the motor vehicle size and weight regulations which have been or may be found by any state to be necessary to meet its highway transportation requirements."

The surprise event of the convention was a two-way transatlantic N.B.C. radio conversation between Mr. Rodgers and Major H. E. Crawfurd, head of the Associated Road Operators, Ltd., of England, speaking from London. It seemed like a gag at the beginning but the reality dawned on the audience as Major Crawfurd and Mr. Rodgers conversed. The effect was a generally felt heart-throb. Major Crawfurd described some of the conditions under which trucks and drivers operated in blackouts and bomb raids. He warned that restrictions placed on trucks are extremely dangerous in wartime and might sabotage defense.

"Every restriction increases the danger in wartime," he said. "Every dollar spent on good roads, particularly in dock areas, is as good as a dollar spent on battleships."

In his president's address Mr. Rodgers dealt with the prospect of government intervention and the duties of truck operators.

After pointing out that the government took over the railroads in the last war, when there was no trucking industry to speak of, Mr. Rodgers said:

"If the government decides to take

PEACE RULES ATA CONVENTION

over the nation's transportation facilities again, and there are many persons in high places who are advocating such procedure, we must feel apprehensive of the future of our own industry.

"It is conceivable that the government might take over the railroads and leave the motor freight industry under private control. Such a development would doom the independent motor carrier, just as it has done in foreign countries where government ownership or control of railroads has taken place. We would find it impossible to compete with transportation facilities operated by the government itself.

"The ability of the motor freight industry to carry its share of the burdens depends, in some measure, upon the willingness of truck operators to make the sacrifices which they undoubtedly will be called upon to make when the chips are down."

Mr. Rodgers said that truck loadings were running 30 to 35 per cent ahead of last year, but that the cost of doing business was rising rapidly. In some case, he said, increased business actually has narrowed the gap between income and expenses. As a means of combatting this trend, he urged intensified efforts to pare operating costs.

A warning that this country is "teetering on the edge of a transportation shortage" was given at the opening session by Thomas H. MacDonald, commissioner, Public Roads Administration. He said the emergency had placed an unprecedented burden upon all modes of transportation.

"As the production program reaches its peak," Mr. MacDonald declared, "the trucking industry must be prepared to carry a greater share of the burden and prove for all time its undisputable indispensability."

To facilitate maximum use of all trucking facilities, Mr. MacDonald urged all truckmen to respond fully to the questionnaires sent out in connection with the defense truck inventory now being conducted at the request of the War Department.

Another warning was uttered by Major E. C. R. Lasher, chief of the War Department's transportation division. He urged transport agencies not to become "complacent and overconfident" because they have been successful to date in meeting the problems of the emergency. He said the real test lies ahead, that soon "it will be a question not of how much traffic do we (the carriers) get, but how will we handle that which is offered to us. He emphasized the need for close cooperation between the carriers and government officials handling transportation, and said "if you do cooperate as a group and have sagacity to see beyond tomorrow, there is nothing to fear in the transportation job which lies ahead. This industry has been given recognition in the transportation world, and the War Department fully recognizes that there is a definite place for motor carriers in its transportation requirements. That the motor carriers are indispensable and have taken their place along with other bulwarks in the defense of a great nation, is a well established fact."

In view of the warnings it was somewhat reassuring to have Interstate Commerce Commissioner John Rogers, chairman of the Central Motor Transportation Committee, say that "the Committee will do all it can to see that you get what you need to carry on your work." He pointed out, however, that a first requisite is greater and more efficient use of existing equipment.

A warning of another type was sounded by J. G. Scott, chief of the Law Enforcement Section of the I.C.C.'s Bureau of Motor Carriers. Speaking of the practice of leasing vehicles to shippers by carriers, Mr. Scott said the I.C.C. looks with suspicious eyes upon such arrangements because virtually all of them are designed to evade regulation. He said that interchange of equipment among carriers themselves is recognized by the I.C.C. as sometimes necessary in the interest of economy and efficiency. However, when interchanges involve leasing of equipment, he emphasized that the leasing carrier must exercise absolute control over vehicles leased and their drivers while they are operating over his routes.

"When you lease a piece of equipment, you have to treat it as though it belonged to you—down to the last detail," he said.

After citing several examples where carriers had leased equipment to

(TURN TO PAGE 42, PLEASE)

33 of the 43 ATA EXECUTIVE COMMITTEEMEN chosen for 1942 are (front row L. to R.): Vice-presidents—W. F. Mullady, region 6; D. L. Sutherland, region 2; secretary—C. G. Moore; treasurer—J. B. Godfrey, Jr.; president—Ted. V. Rodgers; first vice-president—H. D. Horton; second vice-president—J. P. Spaenhower; fourth vice-president—C. J. Williams; John G. Caley, chairman, Irregular Route Common Carriers Conference; vice-presidents—Jack Cole, region 5; F. G. Dorsey, region 7. Second row (L. to R.): Vice-presidents—G. R. Ward, region 13; M. Tucker, region 6; C. P. Clark, chairman, Contract Carriers Conference; vice-presidents—E. J. Buhner, region 5; L. B. Brown, chairman, Regular Route Common Carriers Conference; M. Fullerton, chairman, Household Goods Carriers Conference; J. B. Hassey, chairman, Private Carriers Conference; vice-presidents—R. Jackson, region 2; J. D. Harms, region 11; third vice-president—H. E. English. Third row (L. to R.): Vice-presidents—Dana Clark, region 1; H. L. Spring, region 4; Don Smith, region 13; T. E. Moyers, region 3; Dawson Ditt, region 1, O. R. Craven, region 11; A. T. Burton, region 10; J. P. Robertson, chairman, Cartage Operators Conference; vice-presidents—A. J. Eyraud, region 12; Elton Cooley, region 10; J. R. Herrin, region 7; B. D. Davidson, region 3

IN TRANSPORT, AS IN AVIATION—

on the Job for Defense!

Now, more than ever, America's cars and trucks *must* be kept rolling!

AMERICA'S highways are alive with millions of trucks and cars, on all-vital errands directly or indirectly concerned with the nation's defense.

They've *got* to be kept rolling!

Food must move ever-faster to market, to cantonments and wharves. Supplies must travel swiftly between mines and factories and warehouses. Men must get to and from jobs, often hard to reach except by car.

These vital trucks and cars have got to be kept in efficient condition—to save fuel, to save time and money, to save lives and property!

Bendix willingly shoulders its share of this responsibility . . . bespeaks the cooperation of every American motor vehicle operator.

A new, modern carburetor serves Defense by saving gasoline. Good brakes, kept in repair, safeguard the swift flow of vital traffic. Modernized power braking, on trucks and buses, stops today's heavy loads with minimum muscle-power, protecting the vehicle, the load, the driver and the public.

Bendix not only provides this essential automotive equipment originally, but enlists its nation-wide, trained service organization for the vast and vital job of *maintaining* it. It may be difficult to furnish *all* repair parts promptly. But we intend to try, as hard as we can, because now, more than ever . . .

America's cars and trucks and buses *must* be kept rolling!

BENDIX BRAKES

★

BENDIX B-K
POWER BRAKING

★

BENDIX HYDRAULIC
and VACUUM
REMOTE CONTROLS

★

STROMBERG CARBURETORS

★

BENDIX-WEISS
Constant-Velocity
UNIVERSAL JOINTS

★

ORDNANCE EQUIPMENT

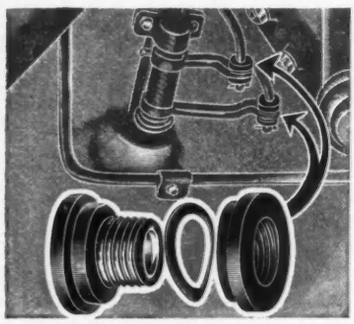
Bendix Products

BENDIX PRODUCTS DIVISION OF BENDIX AVIATION CORPORATION, SOUTH BEND, INDIANA

SHOWCASE
OF NEW PRODUCTS

Gear Shift Lever Bushings

This No. 414 gear shift lever bushing is designed for (late) 1940 and 1941-42 Ford and Mercury. These fiber insulated



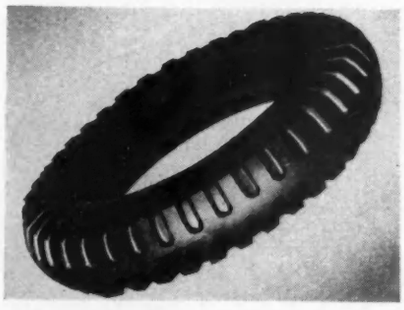
bushings replace the standard rubber bushing and make a permanent repair and can be installed without removing the gear shift lever arm. Made by Champ-Items, Inc., 6191 Maple Ave., St. Louis, Mo.

Heavy Duty Oil

The National Refining Co., Cleveland, Ohio, is producing the National Enarco C-1 motor oil which is a detergency type oil which holds by-products of combustion and oxidation in suspen ion.

General Truck Tire

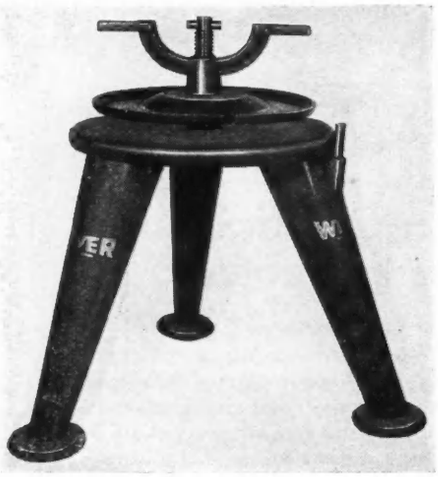
The Non-Directional truck tire, engineered by the General Tire & Rubber Co. for the army, has just been released for commercial use. It is constructed to serve the dual purpose of giving a smooth, even, ride over pavement and provide equally efficient traction over soft, rough terrain. Another advantage is that it expedites tire



changing because the casing may be mounted without danger of facing the tread the wrong way.

Truck Wheel Stand

The new Weaver truck and bus wheel stand holds the wheel rigidly at the proper height from the floor to permit the mechanic to remove and replace tires without working on the floor. A mounting flange locks the wheel securely. One man easily lifts heavy wheels to the top of the stand by hooking the hub on a pin provided at the side of the stand. It is claimed that the new stand eliminates tucking of valve stem and prevents mar-



ring the wheel or tires by making the work easier and more convenient. Weaver Mfg. Co., Springfield, Ill.

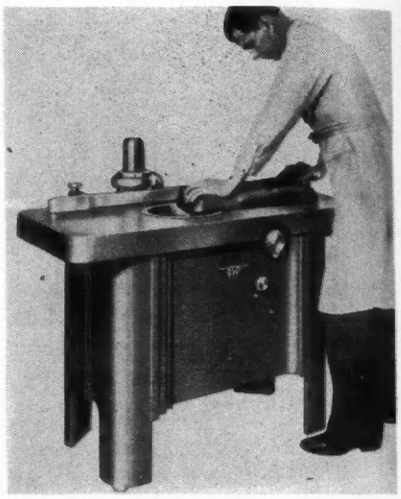
Aluminum Paint Substitute

The Lowe Brothers Co., Dayton, announce Alumitone, which is described as an imitation aluminum finish for trucks and buses. By employing this new product, fleet operators who have established a certain amount of identity through the use of aluminum paint on their vehicles, will be able to maintain their same color scheme during the present shortage of aluminum paint.

Alumitone has been scientifically formulated of available synthetic resins to produce, as closely as possible, the silvery color and brilliancy which characterizes aluminum paint. A distinct advantage of Alumitone is that it contains no bronze to tarnish if the reduced material is left standing.

Horizontal Surface Grinder

The No. 555 horizontal surface grinder permits quick and inexpensive cylinder-head resurfacing. The machine grinds with



one edge of a cupped 12-in. wheel, has a 2 hp. motor and is equipped with a standard vacuum cleaner to clear chips from the table. The head is moved back and forth across the wheel by hand. Available from Van Norman Machine Tool Co., Springfield, Mass.

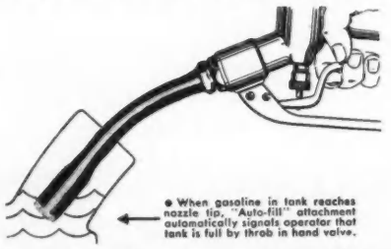
Heavy-Duty Fast Charger

The Benwood Linze Co., St. Louis, Mo., offers a new, heavy-duty fast battery charger designed for 12-volt batteries. This new unit is operated on 220-volt A.C. single phase current supply with a maximum D.C. output of 100 amp.

Virtually all of the company's B-L supercharger features are incorporated in this new charger. They include a built-in, high-rate discharge unit controlled by time clock, heavy-duty transformer and dry plate rectifier cooled and controlled for long life, micrometer adjustment of charging rate through coarse charging control and fine charging control, simplified analyzing and charging instrument, automatic overload circuit breaker and self-lubricating sealed bearing fan.

Gas Nozzle Attachment

An inexpensive attachment that connects to the gasoline nozzle and indicates when the motorist's tank is full, has been announced by The Imperial Brass Mfg. Co., Chicago. When the level of gasoline in


• When gasoline in tank reaches nozzle tip, "Auto-fill" attachment automatically signals operator that tank is full by throb in hand valve.

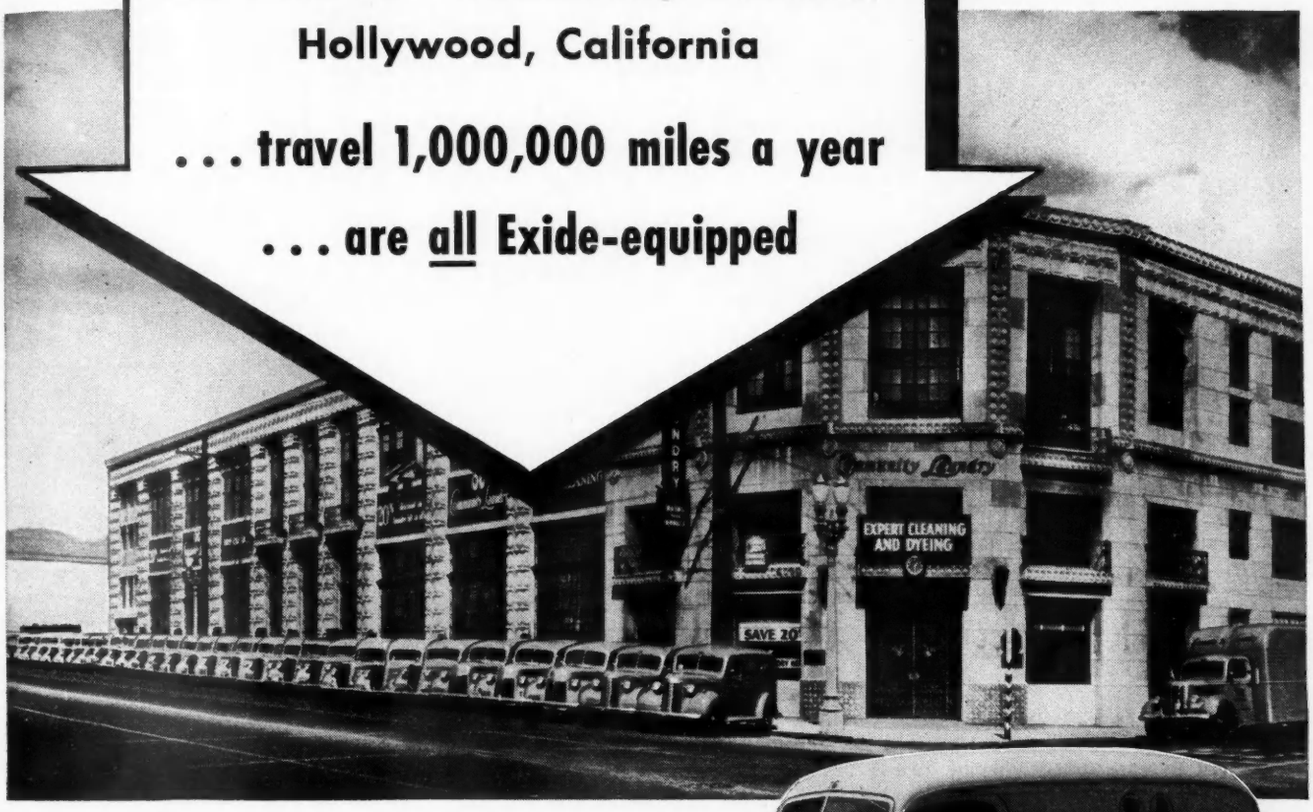
the tank reaches the tip of the "Auto-fill," the attachment automatically signals the operator by a definite throb in the hand valve.

(Turn to Page 46, Please)

52 trucks of Community Laundry, Hollywood, California

. . . travel 1,000,000 miles a year

. . . are <u>all</u> Exide-equipped



65 BATTERY-OPERATED STARTS A DAY is the average for each of the 52 Exide-equipped trucks operated by the Community Laundry, Hollywood, California.

THE Community Laundry of Hollywood serves many a community . . . for its 52-truck fleet visits customers all over vast Los Angeles County.

No wonder that this spick-and-span laundry fleet travels a million miles or more a year! No wonder that each truck averages 65 battery-operated starts a day! And no wonder that for this exacting service the Community Laundry chose several years ago to equip *all* its trucks with Exide Batteries!

Dependable performance day after day, long service life, low battery cost per mile, efficient starting in any weather . . . these are some of the reasons why so many operators of truck fleets have standardized on Exides.

There's an Exide Battery specially engineered to give top-notch performance in every size and type of motor vehicle. There are also Exides with wood and fiberglas separators for "cycling" service. See your Exide Distributor . . . and start cutting *your* battery costs per mile!

Exide
HEAVY-DUTY TRUCK BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto

NEWSCAST

Federal Size & Weight Bill

The oft mentioned Federal regulation of motor vehicle sizes and weights has come a step nearer reality with the introduction of such a bill by Senator Wheeler. The proposed legislation, recommended by the ICC, was referred to the Committee on Interstate Commerce.

The bill authorizes the ICC to prescribe maximum and minimum limitations on truck sizes and weights, and to fix standards for states or sub-divisions after investigation and hearing on complaint of any person or group. A companion bill was introduced in the House by C. F. Lea.

Fewer Light Trucks

Curtailment of light truck production for civilian use through December has been ordered by D. M. Nelson, Director of Priorities. Approximately 109,000 trucks (those less than 1½ tons) may be produced during the five-month period (August through December) depending on availability of material. This maximum production allowance is 14 per cent less than was produced for the same period last year.

Heavy Truck Production

Priority orders which facilitate production of heavy and medium trucks and truck trailers have been extended through January, 1942. The extension order means that during the period from September through January producers may manufacture five-sixths the number of such vehicles as produced during the first half year.

Court Rules Against Leasing

The Fifth Circuit Court of Appeals has ruled that leasing of motor vehicles by Georgia Truck System, Inc., Macon, Ga., under specially worded contracts with 18 Georgia shippers "constituted an unpermitted evasion of the motor carrier law."

Truck Show Cancelled

The National Motor Truck Show, Inc., originally scheduled to be held in Philadelphia, Pa., this month, has been cancelled.

ASI Show Cancelled

The Automotive Service Industries Show, scheduled for Atlantic City, N. J., for early next year has been cancelled. However, the National Standard Parts Assoc. will hold its meeting, as originally scheduled, at the Sherman Hotel in Chicago, Dec. 15 to 18.

TRUCK PRODUCTION

(U. S. and Canada)

	1941	1940	Per Cent Change
January	100,835	74,016	+35.0
February	104,172	71,690	+45.5
March	111,587	75,285	+48.1
April	102,784	76,807	+33.9
May	117,817	74,139	+58.8
June	118,757	67,787	+75.2
July	121,298	74,005	+63.9
August	83,103	41,533	+100.1
September	78,413	56,703	+38.2
9 Months	938,766	611,965	+53.3
October	.....	86,104	.....
November	.....	93,068	.....
December	.....	98,747	.....
Total	.....	889,884	.....

ICC Aids N. Carolina Truckers

When the Seaboard Air Line Railway recently sought to extend its trucking franchise to operate over North Carolina routes now served by certified trucking firms, the ICC stepped in to parry the move. The ICC reported that "railroad companies are seeking through ownership and direct operation of trucking lines . . . to bring about a monopoly and strangulation of the independent trucking industry."

Personalities

Walter K. Coleman has been appointed district manager for Great Central Transport Corp., at Louisville, Ky.

Leslie C. Allman, vice-president, and Elmer G. Grove, treasurer, have been elected to the Board of Directors of the Fruehauf Trailer Co.

C. Alfred Campbell, general sales manager of the Marmon-Herrington Co., Indianapolis, was recently honored by an appointment to the National Panel of Arbitrators of the American Arbitration Assoc.

The Board of Directors of the Firestone Tire & Rubber Co., has elected its president, John W. Thomas, chairman of the Board. Harvey S. Firestone, Jr., formerly vice-president, was named president of the company. Additional appointments were: L. R. Jackson, executive vice-president; John G. Shea, vice-president and treasurer; H. D. Tompkins, vice-president in charge of sales.

George W. Healey has been named sales manager of the North American Van Lines, Inc., Cleveland. He was formerly with Greyvan Lines.

Claus Anderson has been appointed manager of the Great Lakes region of Nash Motors. He was formerly head of Nash's Canadian sales.

W. A. MacDonald (above left) and G. H. Bell (right) have been appointed by Willys-Overland Motors as eastern and western directors of sales respectively

M. M. Scovill has been appointed regional manager of Studebaker's Saint Paul Branch. He has been with the company 16 years

Robt. J. Howison has been named sales manager of the automotive division of Morse Chain Co. of Detroit

A. A. Bull, formerly president of Handy Governor Corp., has been named president of Michigan Wire Cloth Co. of Detroit

Robt. Grant has joined Young Radiator Co. in a managerial capacity. He was formerly an executive of Fuller-Johnson Corp.

Joseph L. White has been appointed as Assistant Director of Transportation, Office of Price Administration. He was formerly consultant of the National Resources Planning Board.

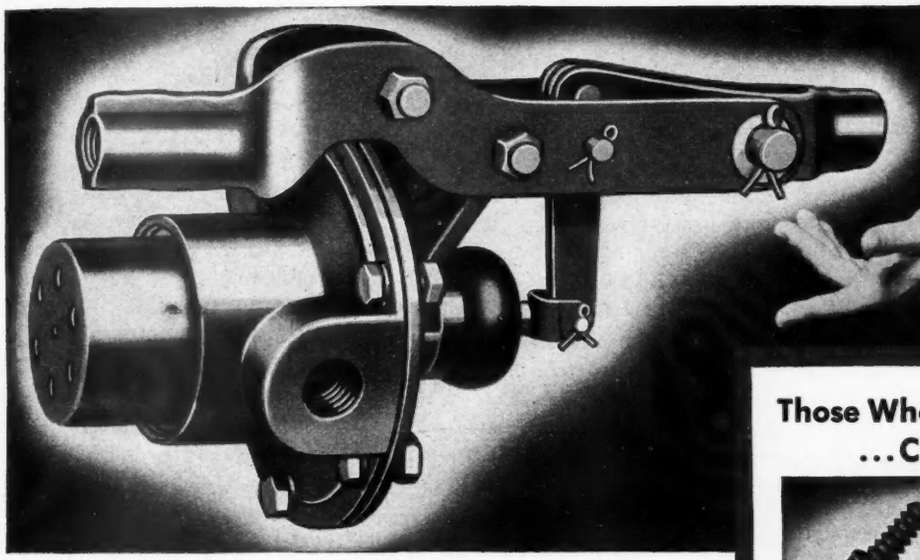
James G. Ellis, Washington correspondent for COMMERCIAL CAR JOURNAL and other Chilton publications, has joined the staff of the Automobile Manufacturers Assoc., Motor Truck Division.

Fire Truck Co. Changes Name

The General Fire Truck Corp., recently announced a change in the company name. It is now known as the General-Detroit Co.

(TURN TO PAGE 57, PLEASE)

This exclusive fully compensating Control Valve safeguards your fleet



A PATENTED FEATURE OF MIDLAND VACUUM POWER BRAKES!

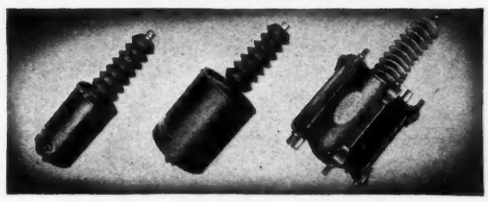
● Braking power is only as good as its *control.*

When you equip your fleet with Midland Vacuum Power Brake equipment, you get the famous Midland fully compensating control valve . . . the valve that permits any degree of brake application with a corresponding "brake feel." A precision scale balance lever puts lost motion to work; an off-set lever by-passes the pull around the valve and prevents strain and premature wear. For tractor-trailer combinations, Midland's Dual Pulse relay valves keep all braking in perfect "time," increasing safety and ease of operation.

Specifying MIDLAND for either vacuum or air brake equipment brings you *engineered advantages* at *no extra cost.* For further details see your nearby Midland distributor or write us direct.

THE MIDLAND STEEL PRODUCTS CO.
10605 Madison Avenue • Cleveland, Ohio
Export Dept.—38 Pearl Street, New York City

Those Who KNOW Power Brakes ...Choose MIDLAND!



Midland Cylinders are "LOAD ENGINEERED"

There is a Midland vacuum cylinder available for every size truck, tractor or trailer. Each cylinder is rated for maximum load, preventing under-powering of vacuum brake.

Kits contain every needed part

Every nut, bolt and screw and complete instructions for installing are included. Nothing else to buy.

Complete Air and Vacuum Kits Engineered Especially For . . .

FORD • DODGE • CHEVROLET • G.M.C.
INTERNATIONAL • DIAMOND T

MIDLAND POWER BRAKES
(CHRISTENSEN)

ATA CONVENTION

(CONTINUED FROM PAGE 36)

shippers as a subterfuge, with the objective of giving the shipper a lower rate or special preference, the enforcement chief said: "You're going to have to be pretty slick to make a lease with a shipper, no matter who draws it up, that I'm not going to attack."

The only warlike meeting was the conference in which petroleum transporters let off steam in attacking the government's method of handling the so-called gasoline shortage along the Atlantic Coast. One after another petroleum haulers tore into Mr. Ickes and the acts of the so-called Federal Petroleum Coordinator. Blood pressures ran high but no blood was let.

Interstate Commerce Commissioner William Lee addressed the convention with a few words but those were weighty. Said he: "In many ways truck transportation is the greatest system of transportation the world has ever seen."

2. Defense Effect On Trucking

National Defense and its effect on trucking operations provided subject matter for the various sessions of the A.T.A. Safety and Operation Section.

Charles G. Morgan, Jr., manager of the A.T.A. division of operations, reported the results of a survey conducted by him which showed conclusively that the shortage in both driver and mechanical personnel was caused by increased business requiring more trained men rather than by loss of employees to either the military services or defense industries. His conclusions were based on replies from 100 operators in 32 states who employed a total of 6889 drivers during July, 1940.

Of this number 303 men, or 4.4 per cent, have been lost to the draft. About 29 per cent of the remainder are in the draft age but many of these are married and have dependents so that actually a total of about 9.4 per cent are actually draft bait. Six and one-half per cent have left the trucking industry to take up work in defense industries. However, the same employers who employed 6889 drivers in July, 1940, now employ 8432 drivers or an increase of 22.4 per cent.

The figures for mechanics parallel the driver figure very closely. Five and six-tenths per cent lost to the draft, 12.6 per cent lost to defense industries and an increased demand for 23.3 per cent more trained men. The Central States were harder hit than the average, losing 27.8 per cent of their mechanics to defense industries. The result based on accident statistics is that while the older drivers with equipment serviced by veteran mechanics had an accident rate of .37 accidents per driver, the new and extra drivers have a rate of .82 accidents per driver.

R. J. Olson, president, Fred J. Olson & Son Motor Service Co., Chicago, indicated in his remarks on "Changes in Disciplining of Personnel Account Defense Shortage," that the day of arbitrary layoffs and discharges was past. He related the success in his organization of having supervisors who are ex-drivers handle driver problems and act as a buffer between drivers and management. Mr. Olson also said that his organization had had a great deal of success with a merit system based on gas mileage, damage to equipment and damage and loss of freight.

In his comments on "New Driver Selection and Training Methods" G. L. Tynefield, Interstate System, Detroit, called attention to the fact that drivers' reactions toward the company change from day to day as their relations change. He suggested that driver training is a job of keeping everlastingly at it because it is never done. For the new drivers Mr. Tynefield declared that he thought there should be a training school jointly financed by the carriers. Such a school, according to Mr. Tynefield, would give the driver two to four weeks' schooling after which time the driver would be ready to spend two to four weeks as a co-driver with a veteran. After this training the driver would be ready to proceed on his own.

Ernest F. Keller, Liberty Highway Co., Toledo, in handling the assignment, "New Personnel Problems in the Terminal," said that he gave employees leaves of absence to take jobs other than with a competitor. His point in doing so is that frequently the employee is not so happy in his new job and wants to come back. In such cases if he is permitted to return he is an improved employee.

Mr. Keller said that there were no new personnel problems but that the old ones had become more acute. He emphasized the need for a full examination of the individual applying for a job, especially his eyes and nerves since badly adjusted employees are apt to blow up in a pinch.

From the floor came the complaint that operators will not answer questionnaires on past employees when a new employer seeks to determine his fitness. This complaint was supplemented by another by Harold Willing, Huber and Huber, who said that even when the questionnaires were returned there was no uniformity of attitude among personnel men toward ex-employees.

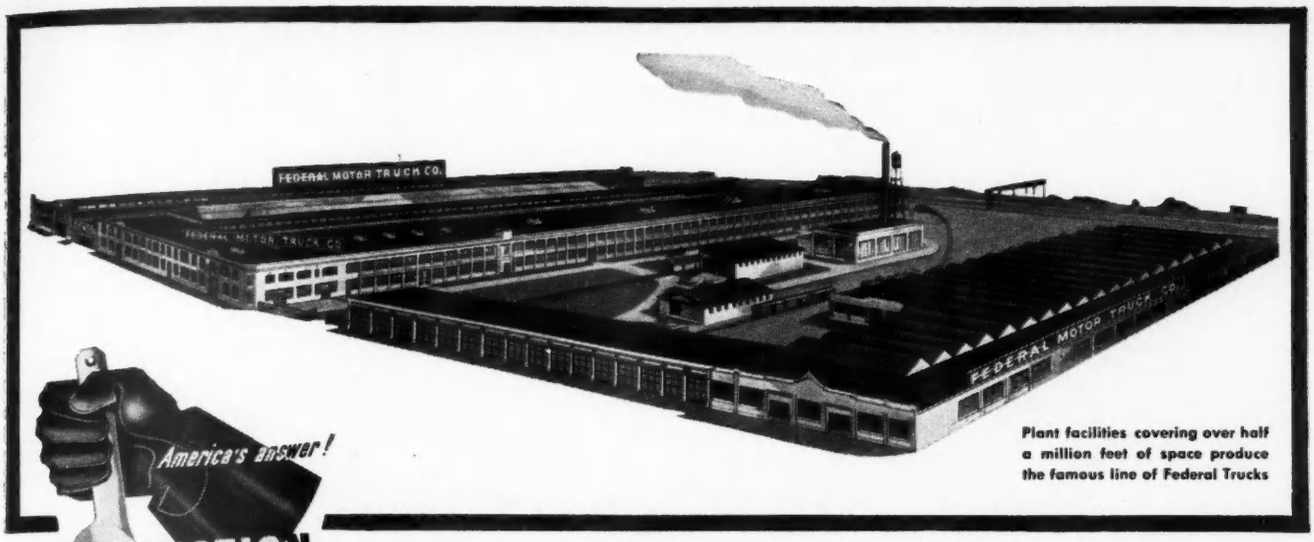
Mr. Keller answered these complaints in part by suggesting that, when information on an applicant is needed, the prospective employer call on the phone for his information and he would probably fare better because some personnel men had found it dangerous to put facts in writing when they were not favorable to the applicant.

D. L. Sutherland, Middle Atlantic Transportation Co., sounded the warning that plans for the issuance of priorities on freight movements are already being drawn. If conditions get to the place where these orders are put into effect, Mr. Sutherland could foresee only chaos. To avoid it he said he was willing to plead with carriers to move every pound of freight offered to them to the best of their ability and not to pick and choose and leave the less desirable freight for someone else. As a servant of the public, Mr. Sutherland pointed out, it is the obligation of public carriers to handle the goods of commerce and industry.

In operation, Mr. Sutherland declared that there was no substitute for proper equipment, knowledge and application and if these three prime factors were used to make one truck pass the same point twice instead of once, the truck had become equal to two trucks. To increase the efficiency of trucks Mr. Sutherland declared that everyone should load trucks on the assumption that he was going to unload the truck himself.

In a paper "If Fuel Rationing Comes" Errol J. Gay, Ethyl Gasoline Corp., reviewed the various methods of maintaining fuel economy. Mr.

(TURN TO PAGE 44, PLEASE)



Plant facilities covering over half a million feet of space produce the famous line of Federal Trucks

America's answer!

PRODUCTION

FEDERAL TRUCKS CIRCLE THE GLOBE—ON A PASSPORT OF 31 YEARS OF DEPENDABILITY

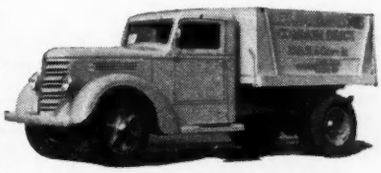
Federal's proved dependability is responsible for its world wide acceptance.

STABILITY THROUGH sound growth built Federal's ample factory facilities . . . today provides the capacity to keep pace with the ever mounting needs of both Industry and Defense.

Since 1910 Federal has manufactured motor trucks exclusively . . . has built into its product the dependability demanded by every conceivable road and load condition . . . now provides in every essence those factors of lower operating upkeep, longer life, and greater stamina.

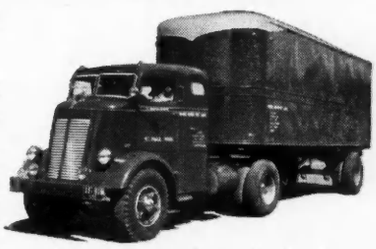
Federal Trucks are available in the widest range of models and types—from light to highest tonnage capacities—in conventional, cab-over-engine and also in special designs for unusual transport needs. They are working in every field of transportation throughout the world—serving the largest corporations, the smallest companies, big fleet owners, individual farmers with equal distinction, unsurpassed economy—will do the same for you.

Consult your nearest Federal Dealer—or write our Sales Engineering Department for on-the-job recommendations.



The extra features built into Federal Trucks serve to match every load and road demand.

Special work requires trucks built to special specifications and Federal supplies such units to order.



Federal's proved standards of truck construction insure lower ton-mile costs.

For light or heavy duty needs, Federal builds trucks to fit your specific job.

Federal C. O. E. Trucks afford a shorter wheelbase—require less garage space—provide a smaller turning radius.

FEDERAL MOTOR TRUCK CO.
Detroit • Michigan

FEDERAL Trucks

SINCE 1910

KNOWN IN EVERY COUNTRY • • SOLD ON EVERY CONTINENT

QUALITY TRUCKS AT PRODUCTION PRICES

(CONTINUED FROM PAGE 42)

Gay's suggestions have been published in articles in COMMERCIAL CAR JOURNAL by Mr. Gay and others.

In a session devoted to "Have You The Answer To My Question," a panel of five operators and chairman James G. Hayden, Horton Motor Lines, Charlotte, N. C., answered questions from the floor. One question was, "What is the experience in hiring men who do not know how to drive at all and teaching them to drive after they are hired." After quite some discussion some one remembered that the ICC forbids hiring drivers until they have had at least one year's passenger car driving experience.

Another question was, "Why don't we have a clearing house for exchange of driver applicant information?" The answer to this question was that there is a commercial clearing house in Detroit that provides identification and physical examinations for drivers that has been successful. In Chicago a similar enterprise was tried but it got into trouble with the union and had to close up.

A third question was, "In setting up control, how far should a safety man go into operation and maintenance." There seemed to be no clean-cut answer to this question but the consensus seemed to be that the safety man should deal with the terminal manager and the shop supervisor since the driver and mechanic work for them and they cannot be responsible to several bosses.

A full day was devoted to showing the slides and giving the talk that makes up the proposed brake school to be conducted under the auspices of A.T.A. It is proposed that the brake school be held where registrations of mechanics are high enough to warrant it. An estimate of the cost was given as $4.50 per registration.

3. Editorial: The ATA Brake School

At the recent convention of the A.T.A., the Safety and Operations Section devoted one full day of its program to putting on display the material which it proposes to use in a brake school for mechanics. Its proponents hope that mechanics in great enough numbers will register for the school and pay the tuition (approximately $4.50) to make it possible to hold the school at various places all over the country.

The material was not complete, which complicates the process of forming an opinion of it.

As it stands, the program consists of an all-day lecture illustrated by slides projected upon a screen. It appears that about 40 per cent of the time the mechanics are in attendance will be spent on the slides.

At the conclusion mechanics will be handed lacquered panels showing the diagrams of brakes together with pertinent information on adjustment and trouble shooting.

Before going further let us compliment the authors on this latter phase of the program. While the panels were not completed and consequently not on display, they were described and on the basis of the description we subscribe wholeheartedly to the idea. As a reference they will be invaluable.

Since the program contemplates running the gamut of brakes in one day, it is problematical how much any mechanic, unaccustomed to absorbing information that way, will remember. However, that is a flaw that can be remedied.

Brake maintenance is as important as everyone says it is, and as neglected as we know it is. The teaching of it on an organized scale is a worthwhile undertaking.

END

(Please resume your reading on p. 38)

Spark Control

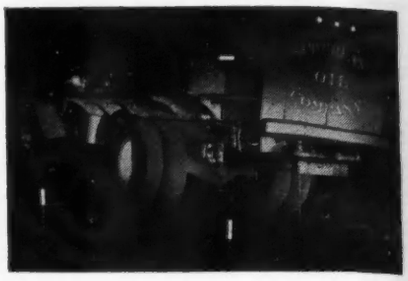
This new unit will permit the present coil of an automobile or truck to deliver a continuous, uninterrupted spark for starting or emergency running. There is no motor kick-back because the unit is timed to deliver spark on power stroke only. The uninterrupted spark remains through the entire power stroke giving immediate starts. It automatically cuts out permitting high speed coil performance.

The unit also acts as a testing device. It will indicate bad ignition points without removal of distributor cap. It will show performance of coil, points and condenser. Adaptable to bench tester for coils and condensers. The retail price is $4.95. Zuk-O-Matic Co., Plainfield, N. J.

Torchlight-Flashlight

A new combination torchlight-flashlight made with a 5¾-in. rod of "Lucite" methyl methacrylate resin provides a warning signal for motorists and truckers stalled at night in any kind of weather.

The side of the "Lucite" rod is completely lacquered a brilliant red to give off a bright, penetrating glow; but the end of the rod is crystal clear, emitting



a strong ray of light similar to that of a flashlight. This light may be attached to a fender with a suction cap.

The plastic lens is reported to have high light transmission, to weigh little and to be virtually unbreakable. The new lights are made by "Traf-O-Lite," Oak Park, Illinois.

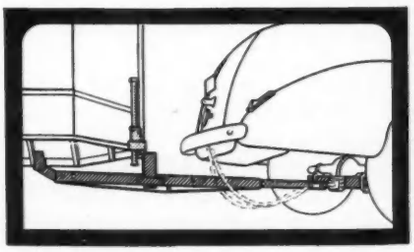
Whiz Car Wash

Speedry is a new material of great cleansing strength, compounded without film-forming soaps or fats. Two ounces of this new material in a bucket of water is powerful enough to thoroughly clean the dirtiest surface. It contains a chemical ingredient that enables water to spread rapidly over large surfaces, dissolving oily film, cutting tar, dirt, and road scum, and leaving a clear, dry finish when rinsed.

Cars washed with Speedry require no chamoising, no wiping—dry quickly, evenly, without streaking or spotting. Can be used with equal efficiency in hot or cold, hard or soft water. Absolutely harmless to skin or car. Retails at 75c. per pint, $4.50 per gallon. From the Hollingshead Corp., Camden, N. J.

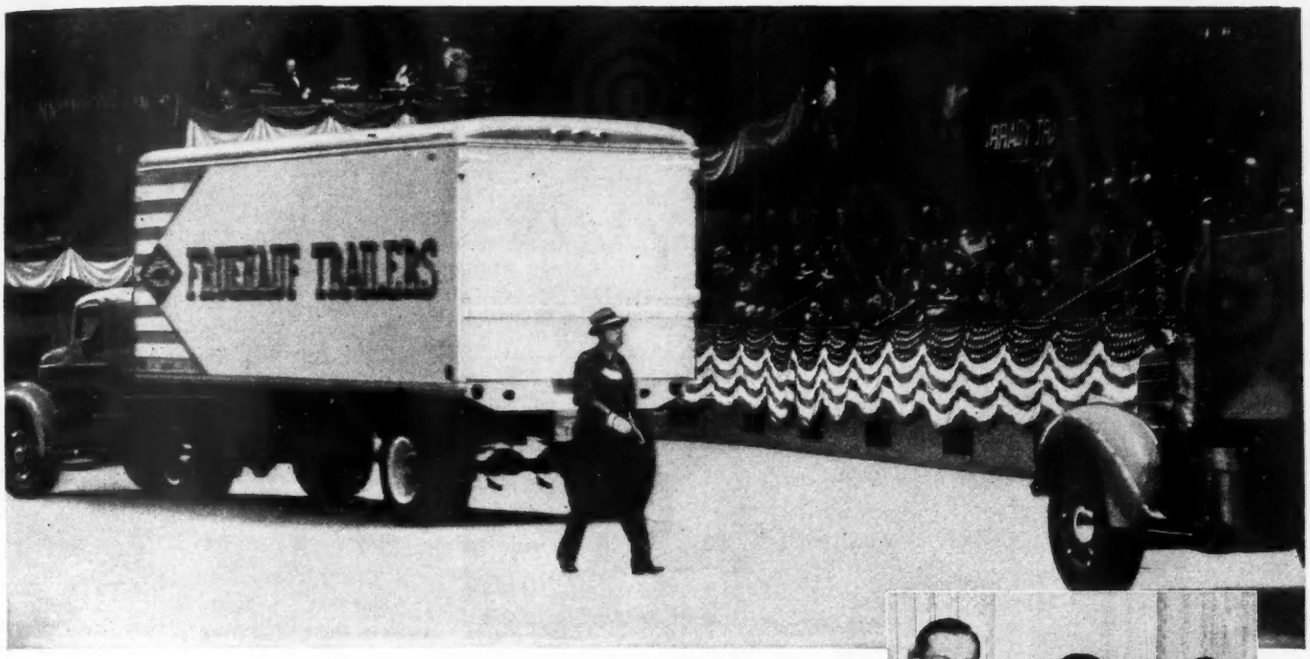
Trailer Hitch

The Rapids Products Company of Cedar Rapids, Iowa, has a direct-to-axle trailer hitch which is unique in trailer hauling. With this simplified hitch, the trailer rides level and road shocks are absorbed by a coil spring unit on the front-end support of the trailer. The hitch itself is telescopic and may easily be lengthened or shortened for truck or passenger car use. The hitch head may



be turned by unlocking and inserting a wrench in a slot just ahead of the coil spring. A turn of the wrench turns the hitch head and it easily slides out of the bracket frame which is built around the differential and axle. Shorter turning, level riding of both the trailer and hauling unit, and added safety are the advantages of this hitch.

THE CONFIDENCE OF CHAMPIONS!



Thanks to the outstanding drivers of the nation for their confidence in Fruehauf!

★ **Winners of first, second and third places in the 1941 National Roadeo at Madison Square Garden drove Fruehaufs!**

★ **Eighteen of the twenty-three State Champions competing in the National Roadeo chose to make their tests with Fruehaufs!**

★ **In previous years, too, Fruehauf has always been the choice of not only the National Champion, but also of a large majority of State Champions!**

A salute to the National Champion, Bud Vandiver, of Colorado (left), who triumphed over twenty-two other State Champions in the National Roadeo at New York City, the world's greatest competition for transport drivers. And congratulations to Edson Smith (center), State Champion of Michigan, and Thomas Doyle (right), State Champion of Georgia, who finished second and third, respectively.

DRIVERS LEARN about Trailers the hard way—by day after day experience over all kinds of roads, under all kinds of conditions. They *know* what every Trailer has . . . what they can do with each one. So it's significant that, year after year, these experienced men turn to Fruehauf when the nation's biggest prize for them is at stake. Their faith in Fruehauf construction and performance has no equal in the whole motor transport field.

Every expression of confidence in Fruehauf Trailers is, quite naturally, an inspiration to us . . . but when such an expression comes from the drivers, and particularly in such overwhelming measure as was shown at the Roadeos, we are more than gratified. We are genuinely humble as we recognize our obligation to keep faith with the drivers who use our products day after day, as well as with the operators who look to us for the equipment that will handle their work most efficiently, economically and safely.

★ ★ ★

World's Largest Builders of Truck-Trailers

FRUEHAUF TRAILER CO. • DETROIT

Sales and Service in Principal Cities

Factories: Detroit, Kansas City, Los Angeles, Toronto

FRUEHAUF TRAILERS *"Engineered Transportation"* REG. U.S. PAT. OFF.

MOTOR TRANSPORT IS ESSENTIAL TO NATIONAL DEFENSE

NEW PRODUCTS

(CONTINUED FROM PAGE 38)

Synthetic Spray Hose

A new type hosce for all standard paint and lacquer spraying equipment is announced by The B. F. Goodrich Co., Akron, Ohio. The new line replaces the company's lacquer hose and its "Mainstay" line of paint spray hose. The new hose is made in inside diameters of ¼, 5/16, ⅜ and ½ in. and outside diameters of ½, 39/64, 11/16 and ⅞ in.

In the ½-in. inside diameter size construction is of two-braid, while the other sizes are one-braid, made of heavy high tensile cords. Tube is a black, oil-resistant compound, while working pressure for all sizes is 150-lb. maximum.

Brake Shoe Roller

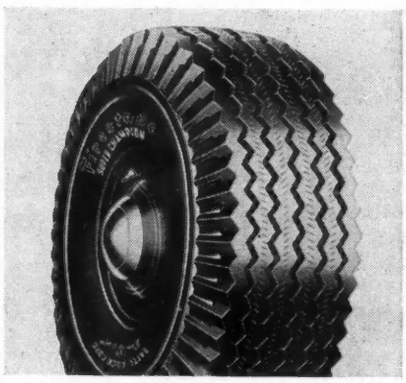
The No. 408 oversize brake shoe rollers for 1935-36-37-38 Ford cars and the No. 408T for Ford trucks and commercial units are designed to compensate for wear of the brake roller support bracket and place the shoes back to their original central position with the brake drum. At the same time they restore the full travel of the brake operating wedge. They restore full pedal travel and compensate for play in pins, rods and arms. Champ-Items, Inc., St. Louis, Mo.

Sealed Beam Head Lamp Kit

The new Arrow Sealed Beam Head Lamp Conversion Kit No. 796 now makes it possible for trucks and buses to convert their head lamps from the old type of lights to the new sealed beam lighting. The kit contains equipment for GMC 1933-34 T18, T23, T33, T43; 1935-36 T16; 1936 T14, T16, T16H, T18, T23, and those T33 having Twilite lenses; 1937 T18, T18H, F18, F18H, T23, T23H, F23, F23H, T33, T33H; 1938 F16, F16H, T18, T18H, F18, F18H, T23, T23H, F23, F23H, T33, T33H; 1939 AF300, 350, 400, 450 and AF230 Special Del. IHC 1934 C-1 having 8¾ in. lens, 1936 C series up to C30; D series up to D-35 exclusive; White 1937-38-39 805, 809, 810, 812, 818, 820; 1939 White Horse; Chevrolet Trucks 1933-36 inclusive. Arrow Safety Device Co., Medford, N. J.

Firestone "Super Champion"

The new Firestone tire called "Super Champion" combines first quality construction with popular price. An important feature of this tire is the addition of "Vitalin," a new rubber compound added to the rubber used in both the tread and cord body.



For protection against skidding and sideslips the tire has a new type tread.

This tire incorporates into its construction the latest improvements developed by Firestone engineers, and tested on the speedways as well as on new superhighways in all parts of the country.

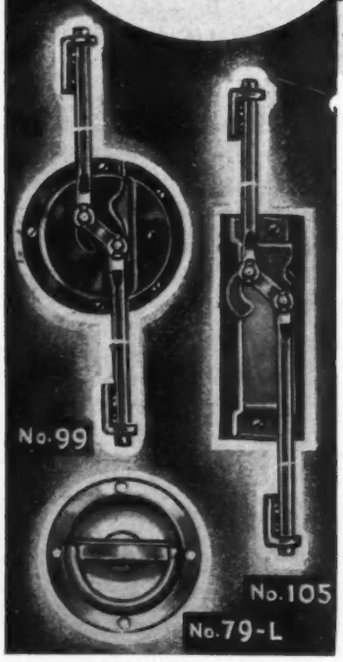
Fast Battery Charger

Allen Electric and Equipment Co., Kalamazoo, Mich., announces a new fast charger known as F-100. Two dry plate rectifiers provide a 100 amp. charging rate. Each rectifier is equipped with its own cooling fan. Other features include an oversize transformer, concealed 10-ft. D.C. leads, 20 ft. A.C. lead, two dial controls, automatic time clock, combination volt and amp. meter, built-in desulphater resistance, battery capacity selector switch, etc. The cabinet is finished in red and cream baked enamel, and has rubber tired wheels and casters.

Additional information may be obtained by writing direct to the manufacturer—Allen Electric and Equipment Company, Kalamazoo, Michigan.

Tanks shown are Heil built. Above unit is fitted with No. 79-L Flush Handles and No. 105 Lock, side and rear doors. Lower unit shows No. 99 Rotary Door Lock.

Increased
• Payload
• Service
with
HANSEN

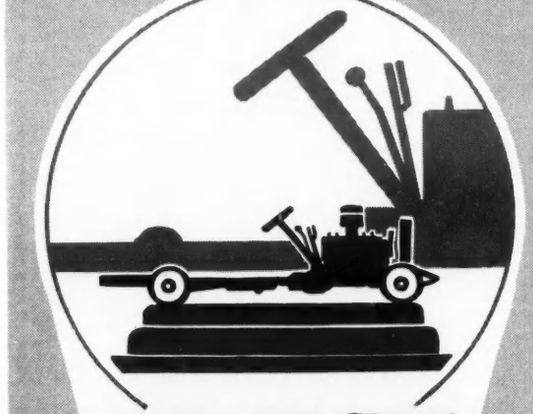


Heil Uses Hansen Quality

DEFENSE deliveries of fuel oil and gasoline to the thousands of trucks and airplanes requiring refueling—wherever and whenever needed—is an important job, done with Tank Trucks. A large majority of tank trucks built by leading tank builders are equipped with HANSEN tank truck hardware.

Among the leading Companies making tank trucks and equipping them with Hansen Hardware is THE HEIL CO., makers of TRAILERIZED tanks for coast-to-coast hauling of fuel oil and gasoline. Full advantage of payload width is provided with Hansen Flush Handles. Solid, silent doors are kept that way with Hansen Locks —standard on Heil tanks and bodies. REQUEST CATALOG.

A. L. HANSEN MFG. CO.
5047 Ravenswood Ave., Chicago, Ill.



TRUCK SPECIFICATIONS TABLE

OF

STANDARD DOMESTIC MODELS

TABULATED BY COMMERCIAL CAR JOURNAL

and brought up to date in this issue from data supplied by manufacturers

KEY TO DEFINITIONS, ABBREVIATIONS AND REFERENCES

DEFINITIONS

MAKE AND MODEL
Only Domestic Truck Models are listed.

OPTIONAL UNITS
For the express purpose of best fitting the truck to the individual job most of the models listed can be provided with optional engines, transmissions, axles, etc., and these models when so equipped are considered standard stock models.

CHASSIS LIST PRICE
The chassis list price applies to the minimum standard wheelbase with standard tires and standard equipment. All prices are F.O.B. factory. Chassis list price does not include the price of the Cab unless otherwise noted.

RECOMMENDED GROSS VEHICLE WEIGHT FOR NORMAL SERVICE
The Gross Weights published herewith are those supplied by manufacturers as their Recommended Gross Vehicle Weights for Normal Operating Conditions, and are based upon the Maximum Authorized Tire Size listed. In actual practice the manufacturer may either increase or decrease the gross vehicle weight rating when either favorable or unfavorable operating conditions are involved. Since the proper performance of a motor truck depends upon many factors, including grades, road conditions, etc., the gross weights that a manufacturer is prepared to recommend will vary with particular conditions, and the manufacturer's own standard of safety factors. Specific recommendations, therefore, should be obtained from the manufacturer's representative.

CHASSIS WEIGHT
The chassis weight listed includes the weight of the minimum standard wheelbase chassis, with cowl, with standard tires, with standard equipment, with crankcase and cooling system full, and 5 gallons of fuel in the tank. It does not include the weight of the Cab. This applies to C.O.E. as well as conventional chassis types. Exceptions are noted.

STANDARD TIRE SIZE
The standard tire size listed is that which is included in the Chassis List Price.

MAXIMUM AUTHORIZED TIRE SIZE
The tire size listed in this column is the maximum size recommended by the manufacturer of the chassis for the Gross Vehicle Weight for Normal Operating Conditions. It is furnished at extra cost, if it differs from the standard size. Dual rears are understood; exceptions noted.

MINIMUM STANDARD WHEELBASE
The minimum standard wheelbase is the so-called standard wheelbase on which the Chassis List Price is based.

MAXIMUM STANDARD WHEELBASE
The maximum standard wheelbase is the extreme end of the standard range of wheelbases offered by the chassis maker.

MAXIMUM BRAKE HP.
Maximum Brake Horsepower at Given R.P.M. is actual dynamometer reading without accessories.

GEAR RATIO RANGE
Gear Ratio Range in High—Ratios within the range given are available at no extra cost. Exceptions are noted.

TRACTORS
Unless given the designation (N)—meaning not available as a tractor—all standard models may be assumed to be available as tractors. Exclusively Tractor models are designated (T).

KEY TO REFERENCES

c.f.—Cab Forward design.

c.o.e.—Cab-Over-Engine design.

(C)—Converted Ford or Chevrolet model, identifiable by engine make listed.

(d)—For dump or tractor service only.

(D)—Diesel-engine equipped.

e.b.s.—Engine-between-seat design.

e.u.s.—Engine-under seat design.

(N)—Not available as a tractor.

(T)—Designed for tractor use only.

(3) Available—All models available in either conventional or c.o.e. design, oversize power plants, oil engines and six-wheel construction.

(5) Condor—These models available with double drop bus frames.

(6) Federal—245 cu. in. engine and 11" clutch available on Models 16 and 76. 263 cu. in. engine and 11" clutch available on Models 16, 17, 76 and 77. 428 cu. in. engine available on Models 45, 55, 92 and 94. 501 cu. in. and 517 cu. in. engines available on Models 55 and 94. Oversize or two-speed rear axles available on Models 16, 17, 18, 20, 25, 29, 35, 45, 76, 77, 80, 85, 89, 90 and 92. Double reduction rear axles available on Models 20, 25, 29, 35, 45, 80, 85, 89, 90 and 92. Two- or three-speed auxiliary transmissions available on all models. Air brakes available on Models 25, 29, 35, 45, 55, 85, 89, 90, 92 and 94. Diesel engines available in all models except c.o.e. All above at extra cost.

(9) Gramm—Models 31, 41, 46, 56, 71, 76, 86 and 96 both gasoline and diesel available with double drop bus frames of various wheelbases. 221 cu. in. engine available on Model 21. 263 cu. in. engine available on Models 31 and 41. 282 cu. in. engine and 5 speed transmission available on Models 41, 46, and 56. 320 cu. in. engine and 5 speed transmission available on Models 41, 46, 56, and 71. 404 cu. in. engine and larger 5 speed transmission available on Model 86. Oversize two speed and double reduction axles available on Models 21, 31, 41, 46, 56, 71, 76 and 86 both gasoline and diesel. All other equipment furnished at extra cost.

(10) Corbitt—Wheelbases optional—any wheelbase desired furnished at chassis price listed.

(11) International Harvester—By "Normal operating conditions" (see definition of Gross Vehicle Weight for Normal Service) is meant operation on comparatively level terrain, over roads with a tractive resistance value of from 25 to 30 pounds per ton of gross vehicle weight and at controlled and uniform speeds within a range of not to exceed 45 m.p.h.

(15) Sterling—Available with double reduction rear axle.

(16) Sterling—Diesel powered unit of comparable capacity available in addition to gasoline models.

(18) Willys—Advertised list price less Federal tax. Cab Pick-up $575; Panel Delivery $849. Prices, complete with shock absorbers and front and rear bumpers. Standard tires 5.50/16—4 ply; Panel Delivery 6.00/16—4 ply; 6.00/168—6 ply—optional.

KEY TO ABBREVIATIONS

MAKES—ALL

B—Bendix.
BL—Brown-Lipe.
Bu or Bud—Buda.
Cat—Caterpillar.
Cl or Cla—Clark.
C or Chev—Chevrolet.
Co—Covert.
Con—Continental.
Col—Columbia.
Cum—Cummins-Diesel.
Det—Detroit Gear.
Eat—Eaton.
Fu—Fuller.
F—Ford.
Her—Hercules.
L—Lockheed.
LO—Lockheed front, Own rear.
LW—Lockheed front, Wisconsin rear.
Lyc—Lycoming.
N.P.—New Process.
O or Ow—Own.
Op or Opt—Optional.
Sal—Salisbury.
Shu—Shuler.
Spi—Spicer.
T or Tim—Timken.
TO—Timken front, Own rear.
TW—Timken-Wisconsin.
TWH—Timken Wisconsin Herrington.
WG—Warner Gear.
WH—Wisconsin Herrington.
W-Hes—Waukesha Hesselman.
Wau—Waukesha.
W or Wis—Wisconsin.
WO—Wagner front, Own rear.
Ws—Westinghouse.

BRAKES—SERVICE

Location

2—Two Wheels, rear only.
4—Four Wheels, front and rear.
4r—Four Wheels, rear only.
6—Six Wheels, front and rear.

Type

I—Internal.
X—External.

Operation

A—Air.
D—Hydraulic and mechanical.
H—Hydraulic.
M—Mechanical.
V—Vacuum.

BRAKES—HAND

Location

C—Center of double propeller shaft.
2—Rear wheels.
2/4—Two-wheel brakes effective on all four wheels through driveshaft.
4—Four wheels.
6—Six wheels.
J—Jackshaft.
T—Transmission.
F—Driveshaft.
P—Propeller shaft.

Type

D—Tru-Stop disk.
I—Internal.
X—External.

BRAKE DRUMS

Material

a—Cast alloy iron.
A—American Car Foundry.
c—Cast iron.
C—Centrifuse.
Cl—Copper iron.
D—Dayton.
E—Ermalite.
F—Furnace iron.
G—Gunite.
N—Nickel iron.
p—Pressed steel.
P—Pressed steel.
s—Cast steel.

(Where a combination of any of the above is used, the first reference mark applies to the front and the second to the rear drums.)

FRAME

Type

I—"I" Beam.
C—Channel.
T—Channel tapered front and rear.
L—Channel reinforced with liner.
B—Channel reinforced with both liner and fishplate.
P—Channel reinforced with plate.
TL—Channel tapered front and rear reinforced with liner.
D—Drop Center
Tf—Tapered front.
X—x-Braced.
S—Deep section channel frame with oak insert.
A—Straight section sidemembers, lined with oak inserts.
Y—Straight section channel sidemembers, lined with full length channel reinforcements, and oak inserts.

GOVERNOR STANDARD

Y—Yes.
N—No.

REAR AXLE

Final Drive and Type

B—Bevel.
C—Chain.
D—Dead.
F—Full-floating.
Hy—Hypoid.
d—Dual range axle.
2—Double Reduction.
S—Spiral bevel.
W—Worm.
½—Semi-floating.
¾—Three-quarter floating.

Gear Ratios

(*) Ratios other than standard at extra cost.
(**) Only one ratio.

Drive and Torque

A—Radius Rods and Torque Arm.
H—Hotchkiss (springs).
R—Radius Rods.
T—Torque Arm.
U—Torque Tube.

WHEELS DRIVEN

2F—Forward unit of Rear Axle Group.
2R—Rear Unit of Rear Axle Group.
4R—Forward and rear units of Rear Axle Group.
4F—Front Axle and Forward unit of Rear Axle Group.
4FR—Front Axle and Rear unit of Rear Axle Group.
6—All wheels.

Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE Minimum Standard	WHEEL-BASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES D-dual rear S-single rear: Standard Front and Rear	TIRE SIZES: Maximum Available Size (Duals unless noted)	ENGINE DETAILS: Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings: Number, Diameter and Length	Governor Standard	TRANSMISSION: Make and Model	TRANSMISSION: Forward Sp'ds	REAR AXLE: Make and Model	REAR AXLE: Gear and Type	REAR AXLE: Drive & Torque	REAR AXLE: Gear Ratio Range in High	FRONT AXLE: Make and Model	BRAKES SERVICE: Make Location Type Operat'n	BRAKES SERVICE: Lining Area	BRAKES SERVICE: Drum Area	BRAKES SERVICE: Drum Material	BRAKES: Hand Location Type	C-A Dimension (Min. Std. W. B.)	FRAME: Side Rail Dimensions	FRAME: Type
1	Avail- (3) C-100	1370	Opt	Opt	11500	4000	6.50/20D	7.50/20	Wau BL	6-3½x4¼	245	5.7	165	73-3000	7-2⅝x10¼	N	WG T9	4	Tim 53514H	SF	H	**-6.6	Tim 30000H	L4IH	266	388	a	TX	60	10x3x¼	T
2	able C-200	1520	Opt	Opt	12600	4200	7.00/20D	7.50/20	Wau BL	6-3½x4¼	245	5.7	165	73-3000	7-2⅝x10¼	N	WG T9	4	Tim 53308H	SF	H	**-6.6	Tim 30000H	L4IH	304	477	a	TX	60	10x3x¼	T
3	C-250	1600	Opt	Opt	14000	4300	7.00/20D	8.25/20	Wau BL	6-3½x4¼	245	5.7	165	73-3000	7-2⅝x10¼	N	WG T9	4	Tim 53308H	SF	H	**-6.6	Tim 31000H	L4IH	300	552	a	TX	60	10x3x¼	T
4	C-300	1795	Opt	Opt	16000	4800	7.50/20D	8.25/20	Wau BM	6-3⅝x4¾	263	5.7	178	78-3100	7-2⅝x10¼	N	WG T9	4	Tim 54411H	SF	H	**-6.8	Tim 31000H	L4IH	328	603	a	TX	60	10x3x¼	T
5	C-350	1905	Opt	Opt	17000	4900	7.50/20D	9.00/20	Wau BK	6-3¾x4¾	282	5.7	188	85-3200	7-2⅝x10¼	N	WG T9A	4	Tim 54411H	SF	H	**-6.8	Tim 32502H	L4IH	328	603	a	TX	60	10x3x¼	T
6	C-400	2135	Opt	Opt	20000	5400	8.25/20D	9.00/20	Wau BK	6-3¾x4¾	282	5.7	188	85-3200	7-2⅝x10¼	N	WG T9A	5	Tim 56410H	SF	R	**-7.4	Tim 32502H	L4IH	328	603	a	TX	60	12x3x¼	T
7	C-400L	2240	Opt	Opt	20000	5550	8.25/20D	9.00/20	Wau BZ	6-4x4¼	320	5.7	210	86-3200	7-2⅝x10¼	N	Fu 5A330	4	Tim 56410H	SF	R	**-7.4	Tim 32502	L4IH	328	603	a	TX	60	12x3x¼	T
8	C-500	2440	Opt	Opt	22000	6100	9.00/20D	9.00/20	Wau BZ	6-4x4¼	320	5.7	222	95-2800	7-2⅝x10¼	Y	Fu 5A330	5	Tim 58300H	SF	R	**-7.8	Tim 33000H	L4IH	370	684	a	TX	60	12x3x¼	T
9	C-550	2880	Opt	Opt	28000	6800	9.00/20D	10.00/20	Wau MKR	6-4⅛x4¾	381	5.3	270	99-2400	7-2⅝x12½	Y	Fu 5-A-430	5	Tim 58300H	SF	R	**-7.8	Tim 35000H	L4IH	370	684	a	TX	60	12x3x¼	T
10	C-600	3320	Opt	Opt	26500	7400	10.00/20D	11.00/20	Wau MZR	6-4¼x4¾	404	5.3	290	106-2400	7-2⅝x12½	Y	Fu 5-A-430	5	Tim 65743H	WF	R	6.8-10.25	Tim 35000H	L4IH	459	793	a	TD	60	12x3x¼	T
11	C-650	3800	Opt	Opt	26500	8000	10.00/20D	11.00/20	Wau SRLR	6-4⅜x5½	462	5.5	330	112-2300	7-3x13⅞	Y	Fu 5-A-620	5	Tim 65743H	WF	R	6.8-10.25	Tim 35000H	L4IH	459	793	a	TD	60	12x3x☆	T
12	C-700	4175	Opt	Opt	35000	8700	10.00/20D	12.00/20	Wau SRKR	6-4⅜x5½	517	5.5	365	126-2300	7-3x13⅞	Y	Fu 5-A-620	5	Tim 66728H	WF	R	6.8-10.25	Tim 26452H	L4IH	544	867	a	TD	60	12x3x☆	T
13	Bantam	349	75	75	1700	850	4.00/15S	5.00/15	Own	4-2.25x3½	50	7.4	34.1	22-3800	3-2¼x1.005	N	WG T48E	3	Spt 10	S	H	**-5.25	Spt 10	O4IM	76	104	P	4I	114	8x2☆x.109	....
14	Brockway 78	895	138	164	13000	3965	6.00/20D	32x6	Con 24B	6-3☆x4⅜	210	6.0	154	71-3100	4-2¾x6	N	WG T9	4	Tim 53521H	SF	H	5.66-6.6	Tim 30000H	L4IH	255	402	a	TX	65☆	8x3x¼	T
♦ 15	83	1195	138	176	14000	4100	6.50/20D	7.50/20	Con 25B	6-3☆x4½	244	6.2	180	80.5-3100	4-2¾x6‡‡	N	WG T9	4	Tim 53521H	SF	H	5.66-6.6	Tim 30000H	L4IHV	255	402	a	TX	65☆	8x3x¼	T
♦ 16	88	1290	150	176	15000	4500	6.50/20D	7.50/20	Con 25B	6-3☆x4½	244	6.2	180	80.5-3100	4-2¾x6‡‡	N	WG T9	4	Tim 53307H	SF	H	6.2 -6.8	Tim 30000H	L4IHV	298	477	a	TX	71☆	8x3x¼	T
♦ 17	92	1560	150	188	16000	4700	7.00/20D	8.25/20	Con 25B	6-3☆x4½	244	6.2	180	80.5-3100	4-2¾x6‡‡	N	WG T9	4	Tim 54411H	SF	H	5.83-6.8	Tim 31000H	L4IHV	329	580	a	CD	83☆	8x3x¼	T
♦ 18	94	1850	156	188	18500	5050	7.50/20D	8.25/20	Con 25B	6-3☆x4½	244	6.2	180	80.5-3100	4-2¾x6‡‡	N	BL B341	4	Tim 56411H	SF	H	6.16-7.4	Tim 31000H	L4IHV	370	660	a	CD	83☆	8x3x¼	T
♦ 19	112	1710	150	188	18000	5150	7.00/20D	8.25/20	Con 38B	6-3¾x4¾	290	6.0	217	92-2800	7-2⅝x12☆	N	BL B341	4	Tim 54411H	SF	H	5.83-6.8	Tim 31000H	L4IHV	329	580	a	CD	77☆	8x3x¼	T
♦ 20	128	1950	156	188	20000	5550	7.50/20D	8.25/20	Con 38B	6-3¾x4¾	290	6.0	217	92-2800	7-2⅝x12☆	N	BL B341	4	Tim 56411H	SF	H	5.71-7.4	Tim 31000H	L4IHV	370	660	a	CD	83☆	8x3x¼	T
♦ 21	130-PS	2525	164	206	20000	6250	34x7D	9.00/20	Con 29-B	8-3‡‡x4½	288	5.4	192	78-2650	7-2⅝x13	N	Fu 5-A-43	5	Tim 56411H	SF	R	6.16-7.4	Tim 32505H	L4IHV	370	660	a	CD	91☆	8x3x¼	B
22	146	2690	126	206	20000	6060	8.25/20D	9.00/20	Con 40B	6-4x4⅜	330	6.0	245	104-2800	7-2⅝x12☆	Y	Fu 5A330	5	Tim 56411H	SF	R	5.76-7.4	Tim 32505H	L4IHV	370	660	a	CD	53	8x3x¼	T
♦ 23	(T) 147	2855	132	164	.....	6000	8.25/20D	9.00/20	Con 40B	6-4x4⅜	330	6.0	245	104-2800	7-2⅝x12☆	Y	Fu 5A33	5	Eat A17-17000	SFd	H	Dual Rge.	Tim 32505H	L4IHV	370	660	a	CD	53	8x3x¼	T
24	152	2870	126	206	22000	6350	8.25/20D	9.00/20	Con 41B	6-4⅛x4⅝	371	5.9	280	100-2500	7-2⅝x13½	Y	Fu 5A43	5	Tim 56411H	SF	R	5.71-6.83	Tim 32505H	L4IHV	370	660	a	CD	53	8x3x¼	T
25	(T) 153	3025	132	164	.....	6400	8.25/20D	9.00/20	Con 41B	6-4⅛x4⅝	371	5.9	280	100-2500	7-2⅝x13½	Y	Fu 5A43	5	Tim 58300H	SF	H	6.14-7.8	Tim 32505H	L4IHV	370	660	a	CD	53	8x3x¼	T
♦ 26	(T) 154	3050	132	164	.....	6300	8.25/20D	9.00/20	Con 41B	6-4⅛x4⅝	371	5.9	280	100-2500	7-2⅝x13½	Y	Fu 5A43	5	Eat A17-17000	SFd	H	Dual Rge.	Tim 32505H	L4IHV	370	660	a	CD	53	8x3x¼	T
♦ 27	(T) 156	3700	132	164	.....	6950	9.00/20D	10.00/20	Con 42B	6-4☆x4⅝	405	5.7	305	112-2500	7-2⅝x13½	Y	Fu 5A43	5	Eat A9-20000	SFd	H	Dual Rge.	Tim 32505H	L4IHV	459	768	a	CD	53	8½x3x☆	T
28	162	3450	121	219	25000	7250	9.00/20D	10.00/20	Con 41B	6-4½x4⅝	371	5.9	280	100-2500	7-2⅝x13½	Y	Fu 5A43	5	Tim 58300H	SF	R	6.14-7.8	Shu 15785B	L4IHV	370	663	a	CD	51	8½x3x☆	T
29	166	4070	121	219	28000	7800	10.00/20D	11.00/20	Con 42B	6-4☆x4⅝	405	5.7	305	112-2500	7-2⅝x13½	Y	Fu 5A43	5	Wis 1337H	2F	R	5.63-8.59	Shu 15785B	L4IHV	459	772	a	CD	51	8¼x3x⅜	T
30	170X	3640	153	219	25000	7960	9.00/20D	10.00/22	Con 33B	6-4¼x4¾	381	4.7	276	106-2600	7-2¾x13☆	Y	Fu 5-A-62	5	Tim 72300H	2F	R	5.78-7.35	Shu 15785B	L4IHV	370	663	a	CD	83☆	8¼x3x☆	T
31	175X	4290	153	219	30000	8550	9.00/20D	11.00/22	Con 34B	6-4⅝x4¾	427	5.4	322	133-2600	7-2¾x13☆	Y	Fu 5-A-62	5	Wis 1337BH	2F	R	5.63-8.59	Shu 15785B	L4IHV	459	772	a	CD	83☆	8¼x3x⅜	T
32	195X	4230	153	219	28000	8650	10.00/20D	11.00/22	Con 33B	6-4¼x4¾	381	4.7	276	106-2600	7-2¾x13☆	Y	Fu 5-A-62	5	Wis 1337BH	2F	R	5.63-8.59	Shu 15785B	L4IHV	459	772	a	CD	83☆	8¼x3x⅜	T
33	220X	4930	153	219	34000	9050	11.00/20D	12.00/24	Con 34B	6-4⅝x4¾	427	5.4	322	133-2600	7-2¾x13☆	Y	Fu 5-A-62	5	Wis 1757H	2F	R	6.06-8.82	Shu 15795B	L4IHV	536	899	a	CD	83☆	8¼x3x⅜	T
34	240X	5130	153	219	30000	8590	10.00/20D	11.00/24	Con 35B	6-4½x5¼	501	5.4	370	144-2400	7-2¾x13☆	Y	Fu 5-A-62	4	Wis 1337BH	2F	R	5.63-7.52	Shu 15785B	L4IHV	459	772	a	CD	83☆	8¼x3x⅜	T
35	260X	6030	195	219	34000	9720	11.00/22D	12.00/24	Con 35B	6-4½x5¼	501	5.4	370	144-2400	7-2¾x13☆	Y	Fu MHU	4	Wis 1757H	2F	R	6.06-8.82	Shu 15795B	L4IHV	536	899	a	CD	125☆	8¼x3x⅜	T
36	260S	6380	195	219	36000	10000	11.00/24D	12.00/24	Con 35B	6-4½x5¼	501	5.4	370	144-2400	7-2¾x13☆	Y	Fu MHU	4	Wis 1757H	2F	R	6.06-8.82	Shu 15795B	Lw4IDV	600	899	a	CD	125☆	8¼x3x⅜	B
♦ 37	Chevrolet BK	536	115	115	4600	°2235	6.00/16S	15/6S	Own	6-3½x3¾	216	6.5	174	90-3300	4-2¾x5⅛	N	Own	3	Own	Hy	U	** 4.11	Own	O4IH	161	242	a	2I	38¼	5¾x2¼x⅛	C
♦ 38	BJ	▲1127	115	115	5000	°3665	6.00/16S	15/6S	Own	6-3½x3¾	216	6.5	174	90-3300	4-2¾x5⅛	N	Own	3	Own	Hy	U	** 4.55	Own	O4IH	161	242	a	2I	.....	5¾x2¼x⅛	C
♦ 39	BL	617	125	125	5200	°2400	15/6S	15/6S	Own	6-3½x3¾	216	6.5	174	90-3300	4-2¾x5⅛	N	Own	3	Own	Hy	H	** 4.55	Own	O4IH	161	242	a	2I	48½	5¾x2¼x⅛	C
♦ 40	BN	▲915	134	134	5800	°3770	7.00/17S	7.50/17-8S	Own	6-3½x3¾	216	6.5	174	90-3300	4-2¾x5⅛	N	Own	4	Own	Hy	H	** 4.55	Own	O4IH	195	297	a	2I	.....	7x2¾x⅛	C
♦ 41	MR	668	134	134	7700	°2970	6.00/20S†	7.50/20-8S	Own	6-3½x3¾	216	6.5	174	90-3300	4-2¾x5⅛	N	Own	4	Own	HyF	H	5.43	Own	O4IH	329	478	a	2I	57¾	7x2¾x⅛	C
♦ 42	MR	694	134	134	7700	°2975	6.00/20S†	7.50/20-8S	Own	6-3☆x3‡‡	235	6.6	192	93-3100	4-2¾x5⅛	N	Own	4	Own	HyF	H	5.43	Own	O4IH	329	478	a	2I	57¾	7x2¾x⅛	C
♦ 43	MR	691	134	134	9500	°3110	6.00/20D	7.50/20-8	Own	6-3½x3¾	216	6.5	174	90-3300	4-2¾x5⅛	N	Own	4	Own	HyF	H	** 6.17	Own	O4IH	329	478	a	2I	57¾	7x2¾x⅛	C
♦ 44	MR	717	134	134	9500	°3115	6.00/20D	7.50/20-8	Own	6-3☆x3‡‡	235	6.6	192	93-3100	4-2¾x5⅛	N	Own	4	Own	HyF	H	** 6.17	Own	O4IH	329	478	a	2I	57¾	7x2¾x⅛	C
♦ 45	*MR	834	134	134	●13500	°3380	6.50/20D‡	7.50/20-8	Own	6-3½x3¾	216	6.5	174	90-3300	4-2¾x5⅛	Y	Own	4	Own	HyF	H	** 6.17	Own	O4IH	329	478	a	2I	57¾	7x2¾x⅛	C
♦ 46	*MR	860	134	134	●13500	°3385	6.50/20D‡	7.50/20-8	Own	6-3☆x3‡‡	235	6.6	192	93-3100	4-2¾x5⅛	Y	Own	4	Own	HyF	H	** 6.17	Own	O4IH	329	478	a	2I	57¾	7x2¾x⅛	C
♦ 47	MS	694	160	160	7700	°3225	6.00/20S†	7.50/20-8S	Own	6-3½x3¾	216	6.5	174	90-3300	4-2¾x5⅛	N	Own	4	Own	HyF	H	5.43	Own	O4IH	329	478	a	2I	83¼	7x2¾x⅛	P
♦ 48	MS	720	160	160	7700	°3230	6.00/20S†	7.50/20-8S	Own	6-3☆x3‡‡	235	6.6	192	93-3100	4-2¾x5⅛	N	Own	4	Own	HyF	H	5.43	Own	O4IH	329	478	a	2I	83¼	7x2¾x⅛	P
♦ 49	MS	717	160	160	9500	°3365	6.00/20D	7.50/20-8	Own	6-3½x3¾	216	6.5	174	90-3300	4-2¾x5⅛	N	Own	4	Own	HyF	H	** 6.17	Own	O4IH	329	478	a	2I	83¼	7x2¾x⅛	P
♦ 50	MS	743	160	160	9500	°3370	6.00/20D	7.50/20-8	Own	6-3☆x3‡‡	235	6.6	192	93-3100	4-2¾x5⅛	N	Own	4	Own	HyF	H	** 6.17	Own	O4IH	329	478	a	2I	83¼	7x2¾x⅛	P
♦ 51	*MS	860	160	160	●13500	°3635	6.50/20D‡	7.50/20-8	Own	6-3½x3¾	216	6.5	174	90-3300	4-2¾x5⅛	Y	Own	4	Own	HyF	H	** 6.17	Own	O4IH	329	478	a	2I	83¼	7x2¾x⅛	P
♦ 52	*MS	886	160	160	●13500	°3640	6.50/20D‡	7.50/20-8	Own	6-3☆x3‡‡	235	6.6	192	93-3100	4-2¾x5⅛	Y	Own	4	Own	HyF	H	** 6.17	Own	O4IH	329	478	a	2I	83¼	7x2¾x⅛	P
♦ 53	(c.o.e.) MU	788	109	109	7700	°3340	6.00/20S†	7.50/20-8S	Own	6-3½x3¾	216	6.5	174	90-3300	4-2¾x5⅛	N	Own	4	Own	HyF	H	5.43	Own	O4IH	329	478	a	2I	62½	7x2¾x⅛	C
♦ 54	(c.o.e.) MU	814	109	109	7700	°3345	6.00/20S†	7.50/20-8S	Own	6-3☆x3‡‡	235	6.6	192	93-3100	4-2¾x5⅛	N	Own	4	Own	HyF	H	5.43	Own	O4IH	329	478	a	2I	62½	7x2¾x⅛	C
♦ 55	(c.o.e.) MU	811	109	109	9500	°3480	6.00/20D	7.50/20-8	Own	6-3½x3¾	216	6.5	174	90-3300	4-2¾x5⅛	N	Own	4	Own	HyF	H	** 6.17	Own	O4IH	329	478	a	2I	62½	7x2¾x⅛	C
♦ 56	(c.o.e.) MU	837	109	109	9500	°3485	6.00/20D	7.50/20-8	Own	6-3☆x3‡‡	235	6.6	192	93-3100	4-2¾x5⅛	N	Own	4	Own	HyF	H	** 6.17	Own	O4IH	329	478	a	2I	62½	7x2¾x⅛	C
♦ 57	*(c.o.e.) MU	954	109	109	●13500	°3750	6.50/20D‡	7.50/20-8	Own	6-3½x3¾	216	6.5	174	90-3300	4-2¾x5⅛	Y	Own	4	Own	HyF	H	** 6.17	Own	O4IH	329	478	a	2I	62½	7x2¾x⅛	C
♦ 58	*(c.o.e.) MU	980	109	109	●13500	°3755	6.50/20D‡	7.50/20-8	Own	6-3☆x3‡‡	235	6.6	192	93-3100	4-2¾x5⅛	Y	Own	4	Own	HyF	H	** 6.17	Own	O4IH	329	478	a	2I	62½	7x2¾x⅛	C
♦ 59	(c.o.e.) MV	813	132	132	7700	°3415	6.00/20S†	7.50/20-8S	Own	6-3½x3¾	216	6.5	174	90-3300	4-2¾x5⅛	N	Own	4	Own	HyF	H	5.43	Own	O4IH	329	478	a	2I	86	7x2¾x⅛	C
♦ 60	(c.o.e.) MV	839	132	132	7700	°3420	6.00/20S†	7.50/20-8S	Own	6-3☆x3‡‡	235	6.6	192	93-3100	4-2¾x5⅛	N	Own	4	Own	HyF	H	5.43	Own	O4IH	329	478	a	2I	86	7x2¾x⅛	C
♦ 61	(c.o.e.) MV	836	132	132	9500	°3555	6.00/20D	7.50/20-8	Own	6-3½x3¾	216	6.5	174	90-3300	4-2¾x5⅛	N	Own	4	Own	HyF	H	** 6.17	Own	O4IH	329	478	a	2I	86	7x2¾x⅛	C
♦ 62	(c.o.e.) MV	862	132	132	9500	°3560	6.00/20D	7.50/20-8	Own	6-3☆x3‡‡	235	6.6	192	93-3100	4-2¾x5⅛	N	Own	4	Own	HyF	H	** 6.17	Own	O4IH	329	478	a	2I	86	7x2¾x⅛	C
♦ 63	*(c.o.e.) MV	979	132	132	●13500	°3825	6.50/20D‡	7.50/20-8	Own	6-3½x3¾	216	6.5	174	90-3300	4-2¾x5⅛	Y	Own	4	Own	HyF	H	** 6.17	Own	O4IH	329	478	a	2I	86	7x2¾x⅛	C
♦ 64	*(c.o.e.) MV	1005	132	132	●13500	°3830	6.50/20D‡	7.50/20-8	Own	6-3☆x3‡‡	235	6.6	192	93-3100	4-2¾x5⅛	Y	Own	4	Own	HyF	H	** 6.17	Own	O4IH	329	478	a	2I	86	7x2¾x⅛	C
♦ 65	(c.o.e.) MW	840	158	158	7700	°3645	6.00/20S†	7.50/20-8S	Own	6-3½x3¾	216	6.5	174	90-3300	4-2¾x5⅛	N	Own	4	Own	HyF	H	5.43	Own	O4IH	329	478	a	2I	111½	7x2¾x⅛	P
♦ 66	(c.o.e.) MW	866	158	158	7700	°3650	6.00/20S†	7.50/20-8S	Own	6-3☆x3‡‡	235	6.6	192	93-3100	4-2¾x5⅛	N	Own	4	Own	HyF	H	5.43	Own	O4IH	329	478	a	2I	111½	7x2¾x⅛	P
♦ 67	(c.o.e.) MW	863	158	158	9500	°3785	6.00/20D	7.50/20-8	Own	6-3½x3¾	216	6.5	174	90-3300	4-2¾x5⅛	N	Own	4	Own	HyF	H	** 6.17	Own	O4IH	329	478	a	2I	111½	7x2¾x⅛	P
♦ 68	(c.o.e.) MW	889	158	158	9500	°3790	6.00/20D	7.50/20-8	Own	6-3☆x3‡‡	235	6.6	192	93-3100	4-2¾x5⅛	N	Own	4	Own	HyF	H	** 6.17	Own	O4IH	329	478	a	2I	111½	7x2¾x⅛	P
♦ 69	*(c.o.e.) MW	1006	158	158	●13500	°4055	6.50/20D‡	7.50/20-8	Own	6-3½x3¾	216	6.5	174	90-3300	4-2¾x5⅛	Y	Own	4	Own	HyF	H	** 6.17	Own	O4IH	329	478	a	2I	111½	7x2¾x⅛	P
♦ 70	*(c.o.e.) MW	1032	158	158	●13500	°4060	6.50/20D‡	7.50/20-8	Own	6-3☆x3‡‡	235	6.6	192	93-3100	4-2¾x5⅛	Y	Own	4	Own	HyF	H	** 6.17	Own	O4IH	329	478	a	2I	111½	7x2¾x⅛	P

† Rear 7.00/20 8-ply. ‡ Rear 7.50/20 8-ply. ● 14,000 lb. when truck is equipped with two-speed rear axle and 8.25/20 10 ply tires. ▲ Includes special panel body. ♦ Denotes new models or change in specifications.
* Governor set not to exceed 45 m.p.h. ° These are shipping weights and do not include weight of gasoline or water.

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Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE Minimum Standard	WHEEL-BASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES D-dual rear S-single rear: Standard Front and Rear	TIRE SIZES: Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS: Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings: Number, Diameter and Length	Governor Standard	TRANSMISSION: Make and Model	TRANSMISSION: Forward Sp'ds	REAR AXLE: Make and Model	REAR AXLE: Gear and Type	REAR AXLE: Drive & Torque	REAR AXLE: Gear Ratio Range in High	FRONT AXLE: Make and Model	BRAKES SERVICE: Make Location Type Operat'n	BRAKES SERVICE: Lining Area	BRAKES SERVICE: Drum Area	BRAKES SERVICE: Drum Material	BRAKES: Hand Location Type	C-A Dimension (Min. Std. W. B.)	FRAME: Side Rail Dimensions	FRAME: Type
1	Federal (●) 8	595	102	128	7000	2500	6.00/16S	7.50/17S	Her QXB3F	6-3¼x4½	205	5.9	144	66-3500	7-2½x10 ‡	N	WG-T9	4	Tim 51521H	SF	H	4.11-4.86	Tim 29500H	L4IH	210	308	a	TX	34½	6x2¼x ‡	T
2	(6) 16	745	135	250	13000	3960	6.00/20S	7.50/20	Her JXFF	6-3¾x4¼	232	6.1	164	75-3000	7-2½x10 ‡‡	N	WG T9	4	Tim 53547H	SF	H	5.14-6.66	Tim 30000H	L4IH	299	478	a	TX	56¾	8 ‡ x2 ¼x¼	T
3	(6) 17	870	135	250	14000	4250	6.00/20†S	8.25/20	Her JXGF	6-3½x4¼	245	5.7	174	79-3000	7-2½x10 ‡‡	Y	WG T9	4	Tim 53308H	SF	H	5.14-6.66	Tim 30000H	L4IH	299	478	a	TX	56¾	8 ‡ x2 ½x¼	T
4	(6) 18	1045	135	250	15000	4350	6.00/20D	8.25/20	Her JXBF	6-3½x4¼	263	6.1	187	82-3000	7-2½x10 ‡‡	Y	WG T9	4	Tim 53308H	SF	H	5.14-6.66	Tim 30003H	L4IHV	302	528	a	TX	56¾	8 ‡ x2 ½x¼	T
5	(6) 20	1245	135	250	17500	4850	6.50/20D	9.00/20	Her JXBF	6-3½x4¼	263	6.1	187	82-3000	7-2½x10 ‡‡	Y	WG T9	4	Tim 54411H	SF	H	5.83-6.80	Tim 31000H	L4IHV	330	578	a	TX	56¾	8 ‡ x2 ½x¼	T
6	(6) 25	1545	135	250	19000	5200	7.00/20D	9.00/20	Her JXCF	6-3¾x4¼	282	5 9	208	85-2900	7-2½x10 ‡‡	Y	Cla 185F	4	Tim 55411H	SF	H	5.71-7.40	Tim 31000H	L4IHV	330	578	a	TX	56¾	8 ‡ x2 ½x¼	T
♦ 7	(6) 29	1960	135	250	20000	5900	7.50/20D	10.00/20	Her JXDF	6-4x4¼	320	5.9	244	95-2800	7-2½x10 ‡‡	Y	Cla 205V	5	Tim 56411H	SF	H	5.71-7.40	Tim 32514H	L4IHV	415	735	a	TX	56¾	8 ‡ x2 ½x¼	T
♦ 8	(6) 35	2495	140	255	22500	6700	8.25/20D	10.00/20	Her WXC3	6-4½x4½	383	6.1	285	114-2800	7-2⅝x13¼	Y	Cla 205V	5	Tim 56411H	SF	H	5.71-7.40	Tim 32515H	L4IHV	415	735	a	TX	57	10½x3 ‡x ‡	T
9	(6) 45	3145	140	255	24000	7300	9.00/20D	11.00/24	Her WXLC3	6-4¼x4⅝	404	6.3	307	125-2800	7-2⅝x13¼	Y	Cla 270V	5	Tim 58301H	SF	H	5.57-7.80	Tim 33006H	L4IHV	504	844	a	TX	57	10½x3 ‡x ‡	T
♦ 10	(6) 55	3695	140	255	28000	8000	9.00/20D	11.00/24	Her WXLC3	6-4¼x4⅝	404	6.3	307	125-2800	7-2⅝x13¼	Y	Cla 270V	5	Tim 75743H	2F	R	7.00-9.50	Tim 35011H	L4IHV	504	844	a	PD	57	10½x3 ‡x ‡	T
♦ 11	 62	5945	141	211	35000	10400	11.00/20D	12.00/24	Con 22RF	6-4½x5¼	501	5.2	400	150-2300	7-2¾x14½	Y	Cla 326VO	5	Tim 76810W	2F	R	6.07-10.42	Tim36000TW	Ws4IA	620	921	a	TD	57	10 ‡ x3 ‡ ‡	TF
12	(6) ... (c.o.e.) 76	855	104	215	13000	4000	6.00/20S	7.50/20	Her JXFF	6-3¾x4¼	232	6.1	164	75-3000	7-2½x10 ‡‡	N	WG T9	4	Tim 53547H	SF	H	5.14-6.66	Tim 31100H	L4IH	299	478	a	TX	60	8 ‡ x2 ½x¼	T
13	(6) ... (c.o.e.) 77	980	104	215	14000	4300	6.00/20†S	8.25/20	Her JXGF	6-3½x4¼	245	5.7	174	79-3000	7-2½x10 ‡‡	Y	WG T9	4	Tim 53308H	SF	H	5.14-6.66	Tim 31100H	L4IH	299	478	a	TX	60	8 ‡ x2 ½x¼	T
14	(6) .... (c.o.e.) 80	1355	104	215	17500	4900	6.50/20D	9.00/20	Her JXBF	6-3½x4¼	263	6.1	187	82-3000	7-2½x10 ‡‡	Y	WG T9	4	Tim 54411H	SF	H	5.83-6.80	Tim 31102H	L4IHV	330	578	a	TX	60	8 ‡ x2 ½x¼	T
15	(6) .... (c.o.e.) 85	1665	104	215	19000	5250	7.00/20D	9.00/20	Her JXCF	6-3¾x4¼	282	5.9	208	85-2900	7-2½x10 ‡‡	Y	Cla 185F	4	Tim 55411H	SF	H	5.71-7.40	Tim 32515H	L4IHV	374	654	a	TX	60	8 ‡ x2 ½x¼	T
♦ 16	(6) .... (c.o.e.) 89	2055	104	215	20000	5950	7.50/20D	10.00/20	Her JXDF	6-4x4¼	320	5.9	244	95-2800	7-2½x10 ‡‡	Y	Cla 205V	5	Tim 56411H	SF	H	5.71-7.40	Tim 32515H	L4IHV	415	735	a	TX	60	8 ‡ x2 ½x¼	T
♦ 17	(6) .... (c.o.e.) 90	2695	116	173	22500	6600	8.25/20D	10.00/20	Her WXC3	6-4½x4½	383	6.1	285	114-2800	7-2⅝x13¼	Y	Cla 205V	5	Tim 56411H	SF	H	5.71-7.40	Tim 35011H	L4IHV	415	735	a	TX	72	10x3 ‡x¼	T
18	(6) .... (c.o.e.) 92	3320	116	173	24000	7200	9.00/20D	11.00/24	Her WXLC3	6-4¼x4⅝	404	6.3	307	125-2800	7-2⅝x13¼	Y	Cla 270V	5	Tim 58301H	SF	H	5.57-7.80	Tim 35011H	L4IHV	504	844	a	TX	72	10x3 ½x¼	T
♦ 19	(6) .... (c.o.e.) 94	3845	116	173	28000	7900	9.00/20D	11.00/24	Her WXLC3	6-4¼x4⅝	404	6.3	307	125-2800	7-2⅝x13¼	Y	Cla 270V	5	Tim 75743H	2F	R	7.00-9.50	Tim 35011H	L4IHV	504	844	a	PD	72	10x3 ½x¼	T
♦ 3	Ford Reg.. 21T-81		134	134	.....	.....	6.00/20†S	8.25/20-10	Own	8-3 ‡ x3¾	221	5.9	156	90-3800	3-2.25x5.65	N	Own O1T	4	Own	FS	H	5.14-6.67	Own	O4IH	303	506	A	TX	60.06	7x2.75x.21	CTf
♦ 4	...Reg.. 2GT-81		134	134	.....	.....	6.00/20†S	8.25/20-10	Own	8-3 .3x4. 4	226	6.7	180	90-3300	4-2.5x5.77	N	Own 1GT	4	Own	FS	H	5.14-6.67	Own	O4IH	303	506	A	TX	60.06	7x2.75x.21	CTf
♦ 5	...Reg.. 29T-81		134	134	.....	.....	6.00/20†S	8.25/20-10	Own	8-3 ‡ x3¾	239	6.4	176	100-3800	3-2.25x5.65	N	Own O1T	4	Own	FS	H	5.14-6.67	Own	O4IH	303	506	A	TX	60.06	7x2.75x.21	CTf
♦ 6	...Reg..218T-81		158	158	.....	.....	6.00/20†S	8.25/20-10	Own	8-3 ‡ x3¾	221	5.9	156	90-3800	3-2.25x5.65	N	Own O1T	4	Own	FS	H	5.14-6.67	Own	O4IH	303	506	A	TX	84.06	7x2.75x.21	CTf
♦ 7	...Reg.2G8T-81		158	158	.....	.....	6.00/20†S	8.25/20-10	Own	8-3 .3x4. 4	226	6.7	180	90-3300	4-2.5x5.77	N	Own 1GT	4	Own	FS	H	5.14-6.67	Own	O4IH	303	506	A	TX	84.06	7x2.75x.21	CTf
♦ 8	...Reg..298T-81		158	158	.....	.....	6.00/20†S	8.25/20-10	Own	8-3 ‡ x3¾	239	6.4	176	100-3800	3-2.25x5.65	N	Own O1T	4	Own	FS	H	5.14-6.67	Own	O4IH	303	506	A	TX	84.06	7x2.75x.21	CTf
♦ 9	.(c.o.e.) 211W-81		101	101	.....	.....	6.00/20†S	8.25/20-10	Own	8-3 ‡ x3¾	221	5.9	156	90-3800	3-2.25x5.65	N	Own O1T	4	Own	FS	H	5.14-6.67	Own	O4IH	303	506	A	TX	59.60	7x2.75x.21	CTf
♦ 10	.(c.o.e.) 291W-81		101	101	.....	.....	6.00/20†S	8.25/20-10	Own	8-3 ‡ x3¾	239	6.4	176	100-3800	3-2.25x5.65	N	Own O1T	4	Own	FS	H	5.14-6.67	Own	O4IH	303	506	A	TX	59.60	7x2.75x.21	CTf
♦ 11	.(c.o.e.) 21W-81		134	134	.....	.....	6.00/20†S	8.25/20-10	Own	8-3 ‡ x3¾	221	5.9	156	90-3800	3-2.25x5.65	N	Own O1T	4	Own	FS	H	5.14-6.67	Own	O4IH	303	506	A	TX	92.93	7x2.75x.21	CTf
♦ 12	.(c.o.e.) 29W-81		134	134	.....	.....	6.00/20†S	8.25/20-10	Own	8-3 ‡ x3¾	239	6.4	176	100-3800	3-2.25x5.65	N	Own O1T	4	Own	FS	H	5.14-6.67	Own	O4IH	303	506	A	TX	92.93	7x2.75x.21	CTf
♦ 13	.(c.o.e.) 218W-81		158	158	.....	.....	6.00/20†S	8.25/20-10	Own	8-3 ‡ x3¾	221	5.9	156	90-3800	3-2.25x5.65	N	Own O1T	4	Own	FS	H	5.14-6.67	Own	O4IH	303	506	A	TX	117.0	7x2.75x.21	CTf
♦ 14	.(c.o.e.) 298W-81		158	158	.....	.....	6.00/20†S	8.25/20-10	Own	8-3 ‡ x3¾	239	6.4	176	100-3800	3-2.25x5.65	N	Own O1T	4	Own	FS	H	5.14-6.67	Own	O4IH	303	506	A	TX	117.0	7x2.75x.21	CTf
♦ 15	...1 Ton 21Y-81		122	122	.....	.....	6.00/17‡S	7.50/17	Own	8-3 ‡ x3¾	221	6.2	156	90-3800	3-2.25x5.65	N	Ow !1Y-Z1Y§	3	Own	FS	H	4.86–	Own	O4IH	187	308	A	2I	48.06	6x2.25x.19	CTf
♦ 16	...1 Ton 2GY-81		122	122	.....	.....	6.00/17‡S	7.50/17	Own	6-3 .3x4. 4	226	6.7	180	90-3300	4-2.5x5.77	N	Ow !GY-ZGY§	3	Own	FS	H	4.86–	Own	O4IH	187	308	A	2I	48.06	6x2.25x.19	CTf
♦ 17	...1 Ton 2NY-81		122	122	.....	.....	6.00/17‡S	7.50/17	Own	4-3 ‡ x3¾	120	6.0	84	40-3200	3-2.25x4.86	N	Ow ONY	4	Own	FS	H	-6.67	Own	O4IH	187	308	A	2I	48.06	6x2.25x.19	CTf
♦ 18	...¾ Ton 21D-81		122	122	.....	.....	6.50/16‡S	7.00/16	Own	8-3 ‡ x3¾	221	6.2	156	90-3800	3-2.25x5.65	N	Ow !1Y-Z1Y§	3	Own	FS	H	4.86–	Own	O4IH	163	264	A	2I	48.06	6x2.25x.19	CTf
♦ 19	...¾ Ton 2GD-81		122	122	.....	.....	6.50/16‡S	7.00/16	Own	6-3 .3x4. 4	226	6.7	180	90-3300	4-2.5x5.77	N	Ow !GY-ZGY§	3	Own	FS	H	4.86–	Own	O4IH	163	264	A	2I	48.06	6x2.25x.19	CTf
♦ 20	...¾ Ton 2ND-81		122	122	.....	.....	6.50/16‡S	7.00/16	Own	4-3 ‡ x3¾	120	6.0	84	40-3200	3-2.25x4.86	N	Ow ONY	4	Own	FS	H	-6.67	Own	O4IH	163	264	A	2I	48.06	6x2.25x.19	CTf
♦ 21	Com. Car 21C-81		114	114	.....	.....	6.00/16S	6.50/16	Own	8-3 ‡ x3¾	221	6.2	156	90-3800	3-2.25x5.65	N	Ow 2C!A-O!A§	3	Own	FS	H	3.78-4.11	Own	O4IH	163	264	A	2I	40.06	5.92x2.25x1.15	CTf
♦ 22	Com. Car 2GC-81		114	114	.....	.....	6.00/16S	6.50/16	Own	6-3 .3x4. 4	226	6.7	180	90-3300	4-2.5x5.77	N	Ow 2GCB§	3	Own	FS	H	3.78-4.11	Own	O4IH	163	264	A	2I	40.06	5.92x2.25x1.15	CTf
♦ 23	Com. Car 2NG-81		114	114	.....	.....	6.00/16S	6.50/16	Own	4-3 ‡ x3¾	120	6.0	84	40-3200	3-2.25x4.86	N	Ow2NCA-2NC B§	3	Own	FS	H	4.55–	Own	O4IH	163	264	A	2I	40.06	5.92x2.25x1.15	CTf
36	Gramm 11A	730	131	155	6500	2850	7.00/16S	7.50/16S	Her QXB3G	6-3¼x4½	205	5.8	144	66-3500	7-2½x10 ‡	N	WG T83	3	Spi 51-1	SF	H	**-5.10	Spi 50-1	L4IH	218	328	a	TX	60½	7x2¼x ‡	T
37	(9) 21A	785	131	155	10000	3000	6.00/20S	32x6-8p	Her QXB3G	6-3¼x4½	205	5.8	144	66-3500	7-2½x10 ‡	N	WG T9	4	Cla R650	SF	H	4.62-6.17	Cla F182	L4IH	212	352	a	TX	60½	7x2¼x ‡	T
38	(9) 31A	870	131	227	12000	3300	6.00/20S	32x6-8p	Her QXC3G	6-3½x4½	221	5.9	154	67-3000	7-2½x10 ‡	N	WG T9	4	Cla R750	SF	H	5.10-6.83	Cla F266	L4IH	233	392	a	TX	60½	7½x2¾x¼	T
39	(9) 41A	930	131	227	14000	3750	6.00/20S	8.25/20	Her QXC3G	6-3½x4½	221	5.9	154	67-3000	7-2½x10 ‡	N	WG T9	4	Tim 53300	SF	H	4.57-6.60	Tim 30000H	L4IH	252	402	a	TX	60½	7½x2¾x¼	T
40	(9) 46A	1150	131	227	14000	3900	6.00/20S	8.25/20	Her JXBG	6-3½x4¼	263	6.1	187	82-3000	7-2½x10 ‡‡	N	WG T9A	4	Tim 53300	SF	H	4.57-6.20	Tim 30000H	L4IH	252	402	a	TX	60½	7½x2¾x¼	T
41	(9) 56A	1360	131	227	15000	4700	6.50/20D	8.25/20	Her JXBG	6-3½x4¼	263	6.1	187	82-3000	7-2½x10 ‡‡	N	WG T9A	4	Tim 54411	SF	H	4.12-6.80	Tim 31000H	L4IHV	334	578	a	TX	60½	10x2¼x ‡	P
42	(9) 71A	1675	131	227	17000	5200	7.00/20D	9.00/20	Her JXCG	6-3¾x4¼	282	5.9	208	85-2900	7-2½x10 ‡‡	N	Cla 200V	5	Tim 55411	SF	H	5.71-7.40	Tim 31000H	L4IHV	334	578	a	TX	60½	10x2¾x ‡	P
43	(9) 76A	1990	131	227	19000	5400	7.00/20D	9.75/20	Her JXDG	6-4x4¼	320	5.9	244	95-2800	7-2½x10 ‡‡	N	Cla 200V	5	Tim 56411	SF	H	4.44-7.40	Tim 32500H	L4IHV	334	578	a	TX	60½	10x2¾x ‡	P
44	(9) 86A	2305	131	227	21500	5700	7.50/20D	10.50/20	Her JXDG	6-4x4¼	320	5.9	244	95-2800	7-2½x10 ‡‡	N	Cla 200V	5	Tim 58300	SF	H	5.25-7.80	Tim 33000H	L4IHV	380	660	a	TX	60½	10x2¾x ‡	P
45	(9) 96A	3565	131	227	28000	8000	9.00/20D	10.50/20	Her WXLC3	6-4¼x4¾	404	5.9	294	118-2800	7-2¾x10 ‡‡	Y	Cla 270V	5	Wis 1337H	2F	H	5.63-8.59	Tim 35000H	L4IHV	474	768	a	TX	60½	12x2¾x ‡	P
46	(D) (9) ... D46A	2545	131	227	14000	4100	6.00/20S	8.25/20	Her DJXB	6-3½x4½	260	14.	178	77-2600	7-3x10 ‡	Y	Cla 185F	4	Tim 53300	SF	H	4.57-5.66	Tim 30000H	L4IH	252	402	a	TX	60½	7½x2¾x¼	T
47	(D) (9) ... D56A	2750	131	227	15000	4900	6.50/20D	8.25/20	Her DJXB	6-3½x4½	260	14.	178	77-2600	7-3x10 ‡‡	Y	Cla 185F	4	Tim 54411	SF	H	4.12-6.80	Tim 31000H	L4IHV	334	578	a	TX	60½	10x2¾x ‡	P
48	(D) (9) ... D71A	3020	131	227	17000	5400	7.00/20D	9.00/20	Her DJXC	6-3¾x4½	298	14.	194	84-2600	7-3x10 ‡	Y	Cla 200V	5	Tim 55411	SF	H	5.72-6.29	Tim 31000H	L4IHV	334	578	a	TX	60½	10x2¾x ‡	P
49	(D) (9) ... D76A	3410	131	227	19000	5700	7.00/20D	9.75/20	Bud 6DT31	6-3⅝x5½	317	14.	224	90-2300	7-3x9⅞	Y	Cla 200V	5	Tim 56411	SF	H	4.44-7.40	Tim 32500H	L4IHV	334	578	a	TX	60½	10x2¾x ‡	P
50	(D) (9) ... D86A	4445	131	227	21500	6000	7.50/20D	10.50/20	Bud 6DT38	6-3⅞x5½	389	14.	284	96-2100	7-3x12½	Y	Cla 270V	5	Tim 58300	SF	H	5.25-6.83	Tim 33000H	L4IHV	380	660	a	TX	60½	10x2¾x ‡	P
51	(D) (9) ... D96A	5330	131	227	28000	8100	9.00/20D	10.50/20	Bud 6DT38	6-3⅞x5½	389	14.	284	96-2100	7-3x12½	Y	Cla 270V	5	Wis 1337H	2F	H	5.63-8.59	Tim 35000H	L4IHV	474	768	a	TX	60½	12x2¾x ‡	P
52	..... GF	5775	150	225	24000	9050	9.75/20D	10.50/20	Her HXC	6-5¼x6	779	4.5	505	143-1600	7-3½x17	N	BL 744	4	Wis 1337H	2F	H	4.29*7.2	Tim 33000	L4IHV	474	768	a	TD	67	12x2½x¼	TP
53	Hug 85W	2875	125	125	23000	7150	8.25/20D	9.00/20	Wau 6BZ	6-4x4¼	320	5.7	210	83-2500	7-2⅝x10¼	Y	Fu 5B33	5	Cla R1300	SF	H	**-7.16	Shu 632	L4IHV	442	689	a	TD	72	7x3¼x ‡‡	I
54	..... 87W	4500	134	134	31000	9540	11.00/20D	11.00/20	Wau 6MZR	6-4¼x4¾	404	5.3	286	95-2200	7-2⅝x12½	Y	Fu 5A43	5	Wis 1757	2F	T	**-9.2	Shu 647	L4IHV	548	867	a	TD	84	8x4 ‡‡x ‡‡	I
55	..... 92U	5925	134	134	37000	11600	11.00/24D	12.00/24	Wau6SRKR	6-4⅝x5½	517	4.5	365	125-2200	7-3x13¾	Y	Fu 5A62	5	Wis 79746	2F	T	**-10.2	Shu 678	Ws4IA	760	1190	a	TD	84	8x4 ‡‡x ‡‡	I
♦ 56	..... (D) D92U	7010	134	134	37000	12065	11.00/24D	12.00/24	Her DRXB	6-4⅞x6	448	17.	370	100-1800	5-4½x11½	Y	Fu 5A62	5	Wis 79746	2F	T	**-10.2	Shu 678	Ws4IA	760	1190	a	TD	84	8x4 ‡‡x ‡‡	I
57	 98	7450	171	171	47500	13615	12.00/24D	14.00/24	Wau 6RBR	6-5x5⅜	677	5.3	480	144-1800	4-3½x11⅜	Y	Fu 8A86	8	Tim 79746	2F	T	**-10.2	Shu 1673	Ws4IA	760	1190	a	TD	90	9x4 ‡‡x ‡‡	I
58	..... (D) D98	8085	171	171	47500	13615	12.00/24D	14.00/24	Cum HB600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Fu 8A86	8	Tim 79746	2F	T	**-10.2	Shu 1673	Ws4IA	760	1190	a	TD	90	9x4 ‡‡x ‡‡	I
59	International (11)																														
60	..... D-2	475	113	113	4400	2240	6.00/16S	7.00/15S	Own HD213	6-3 ‡ x4½	213	6.3	155	78-3400	4-2⅝x6 ‡‡	N	Own HD8	3	Own R1000	S1½	H	3.72-4.18	Own F12	B4IH	191	264	c	2I	39	6x2¼x1½	T
61	..... D-2-M	1115	102	113	4600	1995	6.00/16S	7.00/15S	Ow HD213B	6-3 ‡ x4½	213	6.3	155	78-3400	4-2⅝x6 ‡‡	N	Ow 8-HD8	3	Own R1001	S1½	H	4.18**	Own F102	B4IH	191	264	c	PX		6½x2¼x ‡‡	T
62	..... D-3	515	125	125	5200	2290	6.00/16S	7.00/15S	Own HD213	6-3 ‡ x4½	213	6.3	155	78-3400	4-2⅝x6 ‡‡	N	Own HD8	3	Own R1000	S1½	H	3.72-4.18	Own F12	B4IH	191	264	c	2I	51	6x2¼x1½	T
63	..... D-5	490	113	125	4400	2120	6.00/16S	7.00/15S	Wau FC132	4-3¼x4	132	6.0	89	33-2800	3-2½x4½	N	Own HD8	3	Own R1000	S1½	H	4.18-5.11	Own F12	B4IH	191	264	c	2I	39	6-2¼x1½	T
64	..... D-15-H	605	113	130	6650	2720	7.00/16S	6.00/20	Ow HD213A	6-3 ‡ x4½	213	6.3	155	78-3400	4-2⅝x6 ‡‡	N	Own HD8	3	Own R1101	SF	H	4.875-6.5	Own F100	B4IH	216	308	c	2I	39	6½x2¼x ‡‡	T
65	..... D-15-M	1255	102	113	7000	2275	7.00/16S	7.00/20S	Ow HD213B	6-3 ‡ x4½	213	6.3	155	78-3400	4-2⅝x6 ‡‡	N	Ow 8H41A	4	Own R1101	SF	H	4.875-6.5	Own F200	B4IH	216	308	c	PX		6½x2¼x ‡‡	T

† Rear 6.50/20. ° Rear 7.00/16. ‡ Rear 7.00/17 6-ply. ± Rear 32x6 single. ♦ Denotes new models or change in specifications. (●) Federal—Chassis weight shown is for average chassis without cab and complete with average size tires, tools, spare rim, fuel, oil and water. § Fingertip shifting on steering.

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Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE Minimum Standard	WHEEL-BASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES D-dual rear S-single rear: Standard Front and Rear	TIRE SIZES: Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS: Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings: Number, Diameter and Length	Governor Standard	TRANSMISSION: Make and Model	TRANSMISSION: Forward Sp'ds	REAR AXLE: Make and Model	REAR AXLE: Gear and Type	REAR AXLE: Drive & Torque	REAR AXLE: Gear Ratio Range in High	FRONT AXLE: Make and Model	BRAKES SERVICE: Make Location Type Operat'n	BRAKES SERVICE: Lining Area	BRAKES SERVICE: Drum Area	BRAKES SERVICE: Drum Material	BRAKES: Hand Location Type	C-A Dimension (Min. Std. W. B.)	FRAME: Side Rail Dimensions	FRAME: Type
	Sterling—Cont.																														
1	.....(16) HC147	**	175	215	36000	10600	9.75/22D	11.25/24	Wau6SRKR	6-4½x5½	517	5.5	369	125-2300	7-3x13¼	Y	Fu 5A62	5	Ow NR147M	CD	R	7.40-10.82	Tim 26452H	LO4IDV	658	1144	a	TX	96	9¼x3½x¾	A
2	.....(16) HC156	**	175	215	40000	11050	10.50/24D	12.00/24 ¶	Wau6SRKR	6-4½x5½	517	5.5	369	125-2300	7-3x13¼	Y	Fu 5A62	5	Ow 8R156M	CD	R	7.40-10.82	Tim 27452H	LO4IDV	658	1162	a	JX	96	9¼x3½x¾	A
3	.....(16) HC165	**	175	215	40000	11275	10.50/24D	12.00/24 ¶	Wau6SRKR	6-4½x5½	517	5.5	369	125-2300	7-3x13¼	Y	Fu 5A62	5	Ow NR165M	CD	R	7.40-10.82	Tim 27452H	LO4IDV	638	1162	a	TX	96	9¼x3½x¾	A
4	.....(16) HC175	**	175	215	45000	12600	11.25 24*D	12.75/24	Wau6SRKR	6-4½x5½	517	5.5	369	125-2300	7-3x13¼	Y	Fu 5A62	5	Ow NS175W	CD	R	7.31-10.68	Ti 27452TW	Ws4IA	708	1176	a	TX	96	9¼x3½x¾	A
♦ 5	.....(16) HC185	**	185	225	48000	13675	12.00/24*D	13.50/24 ¶	Wau 6RBR	6-5x5¾	677	5.3	492	152-2200	4-3½x11	Y	Fu 4B86	4	Ow NS185W	CD	R	7.31-10.68	Ti 27452TW	Ws4IA	708	1162	as	TX	97	9¼x3½x¾	A
♦ 6	.....(16) HC200	**	185	225	50000	15100	12.75/24*D	13.50/24 ¶	Wau 6RBR	6-5x5¾	677	5.3	492	152-2200	4-3½x11	Y	Fu 4B86	12	Own S8200W	CD	R	7.31-10.68	Ti 27452TW	Ws4IA	708	1162	as	JX	97	9¼x3½x¾	Y
♦ 7	.....(16) HC250	**	177	177	60000	16775	13.50/25¶D	13.50/24 ¶	Wau 6RBR	6-5x5¾	677	5.3	492	152-2200	4-3½x11	Y	Fu 4B86	12	Ow W8250W	CD	R	7.31-10.68	Ti 27451TW	Ws4IA	708	1162	as	JX	96	12x3½x¾	Y
8	Stewart.....49A	1925	144	224	19500	5950	7.00/20D	9.00/20	Wau 6BZ	6-4x4¼	318	5.7	210	86-3000	7-2¾x10¼	Y	Fu 5B330	5	Tim 56400	FS	R	6.83-7.80	Cla 450	L4IHV	408	742	E	T	64	10x2¾x⅞	T
9	.....58A	2845	140	228	22000	7100	7.50/20D	10.00/20	Wau 6MZR	6-4¼x4⅜	404	5.3	300	105-2500	7-2⅝x12½	Y	Fu 5B430	5	Eat 1801	FS	R	7.16	Tim 35000	L4IHV	478	848	E	T	64‡‡	10x2¾x⅞	T
10	.....59A	3190	140	228	25000	7490	8.25/20D	11.00/20	Wau 6MZR	6-4¼x4⅜	404	5.3	300	105-2500	7-2⅝x12½	Y	Fu 5B430	5	Eat 2680	F2	R	8.50	Tim 35100	L4IHV	510	990	E	T	64‡‡	10x2¾x⅞	T
11	.....58A	4190	140	228	27000	8250	9.00/20D	11.00/20	Wau6SRKR	6-4½x5½	517	5.5	369	110-2400	7-3x13¼	Y	Spi 5351	5	Tim 75743	F2	R	7.37-8.64	Eat 570	L4IHV	510	990	E	T	64	10x2¾x⅞	T
	Truckstell																														
♦ 12	...(C) TRC-18-5	2256	114	197	18500	5870	8.25/20D	9.00/20	Chev	6-3⅛x3⅜	235	6.61	192	93-3000	4-2¾x5⅛	N	Chev BL	12	Cla 1300	SF	H	6.83	Chev	L4IHV	412	603	a	D	74	7½x3x⅜	C
♦ 13	..(C) TRF-18-5E	2294	114	197	18500	5870	8.25/20D	10.00/20	Ford	8-3⅛x3⅜	239	...	176	95-3600	3-2.5x4.7	N	Ford BL	12	Cla 1300	SF	H	6.83	Ford	L4IHV	407	602	a	T	73	7½x3x⅜	C
♦ 14	..(C) TRF-18-5S	2297	114	197	18500	5850	8.25/20D	10.00/20	Ford	6-3.3x4.4	266	6.7	180	90-3300	4-2.5x4.4	N	Ford BL	12	Cla 1300	SF	H	6.83	Ford	L4IHV	407	602	a	T	73	7½x3x⅜	C
♦ 15	(C)TRC-18-5CO	2378	114	197	18500	5870	8.25/20D	9.00/20	Chev	6-3⅛x3⅜	235	6.61	192	93-3000	4-2¾x5⅛	N	Chev BL	12	Cla 1300	SF	H	6.83	Chev	L4IHV	412	603	a	D	74	7½x3x⅜	C
♦ 16	(C)TRF-18-5ECO	2425	114	197	18500	5870	8.25/20D	10.00/20	Ford	8-3⅛x3⅜	239	...	176	95-3600	3-2.5x4.7	N	Ford BL	12	Cla 1300	SF	H	6.83	Ford	L4IHV	407	602	a	T	73	7½x3x⅜	C
♦ 17	(C)TRF-18-5SCO	2410	114	197	18500	5850	8.25/20D	10.00/20	Ford	6-3.3x4.4	266	6.7	180	90-3300	4-2.5x4.4	N	Ford BL	12	Cla 1300	SF	H	6.83	Ford	L4IHV	407	602	a	T	73	7½x3x⅜	C
♦ 18	..(C)TRC-35BM	2772	134	160	.....	5300	7.50/20D	8.25/20D	Chev▲	6-3⅛x3⅜	235	6.61	192	93-3000	4-2¾x5⅛	N	Cla	4	Chev 2	SF	H	5.64-8.22	Chev	O4IHV	330	478	a	2I	57¾	7x2¾x⅜	C
♦ 19	(C)TRC-35BMO	2881	109	158	.....	5450	7.50/20D	8.25/20D	Chev▲	6-3⅛x3⅜	235	6.61	192	93-3000	4-2¾x5⅛	N	Cla	4	Chev 2	SF	H	5.64-8.22	Chev	O4IHV	330	478	a	2I	62½	7x2¾x⅜	C
♦ 20	..(C)TRC-40BM	3353	134	160	.....	5500	7.50/20D	9.00/20D	Chev▲	6-3⅛x3⅜	235	6.61	192	93-3000	4-2¾x5⅛	N	Cla	4	Eat 1475	SF	H	6.50-9.02	Chev	O4IHV	330	478	a	2I	57¾	7½x3x⅜	C
♦ 21	(C)TRC-40BMO	3462	109	158	.....	5650	7.50/20D	9.00/20D	Chev▲	6-3⅛x3⅜	235	6.61	192	93-3000	4-2¾x5⅛	N	Cla	4	Eat 1475	SF	H	6.50-9.02	Chev	O4IHV	330	478	a	2I	62½	7½x3x⅜	C
22	Ward La Fr...125	3654	187	200	21000	8000	9.00/20D	9.75/20	Wau MZR	6-4¼x4⅜	404	5.7	305	112-2600	7-2⅝x12½	Y	Fu 5A430	5	Tim 58300H	SF	R	5.25-7.8	Tim 33000H	L4IHV	389	694	a	TD	108½	12x3¼	P
23	131	4460	204	215	26000	8500	9.75/20D	10.50/20	Wau MZR	6-4¼x4⅜	404	5.7	305	112-2600	7-2⅝x12½	Y	Fu 5A430	5	Wis 1337H	2F	R	5.60-9.4	Tim 35000H	L4IHV	448	772	a	CD	125	12x3¼	T
24	136	4961	204	215	26000	8700	9.75/20D	10.50/20	Wau SRLR	6-4⅝x5½	462	5.0	332	112-2400	7-3x13½	Y	Fu 5A620	5	Wis 1757W	2F	R	6.00-9.2	Tim 26452TW	Ws4IA	544	867	a	CD	77½	12x3¼	T
25	156	6250	156	218	36000	10000	10.50/20D	11.25/24	Wau SRLR	6-4⅝x5½	462	5.0	332	112-2400	7-3x13½	Y	Fu 5A430	5	Wis 1757W	2F	R	7.10-10.	Tim 26452TW	Ws4IA	544	867	a	CD	77½	12x3¼	T
26	.....156S	6450	156	218	40000	10500	10.50/20D	12.00/24	Wau SRKR	6-4⅝x5½	517	5.0	365	126-2400	7-3x13½	Y	Fu 5A620	5	Wis 1910W	2F	R	7.10-10.0	Tim26452TW	Ws4IA	544	595	a	CD	77½	3¼x12	T
27	201	7591	156	218	40000	10000	10.50/20D	11.25/24	Wau GAK	6-5½x5½	784	...	550	150-3000	7-	Y	Fu 4A86	..	Wis 1910W	2F	R	7.10-10.0	Tim26452TW	Ws4IA	544	595	a	CD	77½	3¼x12	T
28	.....55RH	5350	156	218	36000	10000	10.50/20D	11.25/24	Wau SRKR	6-4⅝x5½	517	5.0	365	126-2400	7-3x13¼	Y	Fu 5A620	5	Tim 76793H	2F	R	6.00-9.20	Tim26482H	L4IHV	488	1293	a	CD	77½	3¼x12	T
29	.....(D) 127D	5655	187	215	21000	8500	9.00/20D	9.75/20	Cum AA6	6-4x5	377	14.	270	100-2200	7-4½x11½	Y	Fu 5A430	5	Tim 58300H	SF	R	5.25-7.80	Tim 33000H	L4IHV	389	1221	a	TD	108½	3¼x12	T
30	.....(D) 138D	7414	204	215	26000	10000	9.75/20D	10.50/20	Her DRXB	6-4⅝x5¼	474	14.	350	120-2000	7-3x13½	Y	Fu 5A620	5	Wis 1337TW	2F	R	5.60-9.40	Tim35000TW	Ws4IA	507	872	a	CD	125	3¼x12	T
31	.....(D) 156D	8159	156	218	36000	10400	10.50/20D	11.25/24	Her DRXB	6-4⅝x5¼	474	14.	350	120-2000	7-3x13½	Y	Fu 5A620	5	Wis 1757KW	2F	R	6.00-9.20	Tim26452TW	Ws4IA	544	595	a	CD	77½	3¼x12	T
32	.....(D) 176D	8259	156	230	36000	10900	10.50/20D	11.25/24	Cum HB600	6-4½x6	672	17	500	150-1800	7-4½x16½	Y	Fu 4A86	8	Wis 1757W	2F	R	6.00-9.2	Tim 26452TW	Ws4IA	544	867	a	CD	77½	12x3¼	T
33	.....(D) 201D	8591	156	218	40000	11500	10.50/20D	11.25/24	Cum HB600	6-4½x6	672	17	500	150-1800	7-4½x16½	Y	Fu 4A86	4	Wis 1910W	2F	R	7.1-10.00	Tim 26452TW	Ws4IA	544	867	a	CD	77½	12x3¼	T
34	.....(e.o.e.) H	4250	132	Opt	23000	8800	9.00/20D	10.50/24	Wau MZR	6-4¼x4⅜	404	5.7	305	112-2600	7-2⅝x12½	Y	Fu 5A430	5	Tim 58300H	SF	R	5.25-7.8	Shu 672B1	L4IHV	389	758	a	CD	106	12x3¼	T
35	.....(e.o.e.) K	5643	146	Opt	28000	9500	9.75/20D	10.50/24	Wau SRLR	6-4⅝x5½	462	5.0	332	112-2400	7-3x13½	Y	Fu 5A620	5	Wis 1337 H	2F	R	5.6-9.4	Shu 672B1	L4IHV	448	867	a	CD	122	12x3¼	T
36	.....(e.o.e.) L	6651	146	Opt	36000	10000	10.50/20D	11.25/24	Wau SRKR	6-4⅝x5½	517	5.0	365	126-2400	7-3x13½	Y	Fu 5A620	5	Wis 1757W	2F	R	6.00-9.2	Shu 673B12	Ws4IA	544	867	a	CD	122	12x3¼	T
37	.....(e.o.e.) J	4893	132	Opt	28000	9000	9.75/20D	10.50/20	Wau MZR	6-4¼x4⅜	404	5.7	305	112-2600	7-2⅝x12½	Y	Fu 5A430	5	Wis 1337H	2F	R	5.60-9.40	Shu 672B1	L4IHV	448	515	a	CD	106	3¼x12	T
38	.....(e.o.e.) LD	8209	146	Opt	36000	11000	10.50/20D	11.25/24	Cum HB600	6-4½x6	672	17.	500	150-1800	7-4½x16½	Y	Fu 4A86	5	Wis 1757W	2F	R	6.00-9.20	Shu 673B12	Ws4IA	544	595	a	TD	122	3¼x12	T
39	.....(e.o.e.) MD	8951	146	Opt	40000	12500	10.50/20D	11.25/24	Cum HB600	6-4½x6	672	17.	500	150-1800	7-4½x16½	Y	Fu 4A86	5	Wis 1910W	2F	R	7.10-10.0	Shu 673B12	Ws4IA	544	595	a	TD	122	3¼x12	T
40	Warford..(C) DC-2	2875	163	200	26500	6200	32x6D	8.25/20	Ford V-8	8-3⅛x3⅜	221	6.1	156	90-3800	3-2.5x4.7	N	Ford Own	8	Ford	SF	A	6.67	Ford	6IHV	501	712	A	FX	89	7½x3x½	C
41	.....(C) WC-2	2875	163	204	26500	6100	32x6D	8.25/20	Chev.	6-3½x3¾	217	6.5	174	90-3200	4-2¾x5⅛	N	Chev. Own	8	Chev.	HY	A	6.17	Chev.	6IHV	545	710	A	4I	86¾	7½x3x½	C
42	.....(C) DC-1	2875	163	200	30000	6400	7.50/20D	8.25/20	Ford V-8	8-3⅛x3⅜	239	6.1	176	100-3600	3-2.5x4.7	N	Ford Own	8	Ford	SF	A	6.67	Ford	6IHV	501	712	A	FX	89	7½x3x½	C
43	.....(C) WC-1	2875	163	204	30000	6300	7.50/20D	8.25/20	Chev.	6-3⅛x3⅜	235	6.6	192	93-3200	4-2¾x5⅛	N	Chev. Own	8	Chev.	HY	A	6.17	Chev.	6IHV	545	710	A	4I	86¾	7½x3x½	C
44	Willys..(18) SC442	410	104	104	3700	1285	5.50/16S	6.00/16S	Own 442	4-3½x4¾	134	6.1	106	61-3800	3-2.3x5.5	N	WG T84G	3	Sal 21-1	S	H	4.82	Own 442	B4IH	155	220	a	2I	32½	4¾x1¾x⅞	KX
45	.(18) SCOF442P	(18)	104	104	3900	1285	6.00/16S	(18)	Own 442P	4-3½x4½	134	6.1	106	61-3800	3-2.3x5.5	Y	WG T84G	3	Sal 21-1	S	H	4.82	Own 442P	B4IH	155	220	a	2I	.....	4¾x1¾x⅞	KN
	Four-Wheel-Drive																														
46	Corbitt...(10) F-12	2375	Opt	Opt	12500	4460	6.50/20D	8.25/20	Con A6244	6-3⅞x4½	244	5.4	170	83-3200	4-2¾x6¾	N	WG T9	8	Tim 53521H	SF	H	5.14-6.6	Wis F30B	L4IH	270	452	a	TX	Opt	7¼x3½x⅞	T
47	.....(10) F-14	3200	Opt	Opt	14500	5060	7.50/20D	8.25/20	Con M6271	6-3⅝x4½	271	5.7	191	85-2900	7-2⅝x12⅞	N	Cla B116C	8	Tim 54411H	SF	H	5.83-6.8	Wis F544B	L4IH	335	578	a	TD	Opt	8x3½x¾	T
48	.....(10) F-18	4500	Opt	Opt	18500	6900	8.25/20D	9.00/20	Con E-602	6-4¼x4½	361	5.4	252	95-2500	7-2⅝x13	N	Fu MGU	8	Wis 5002L	2F	H	6.00-8.21	Wis F501H1	L4IH	335	578	a	TD	Opt	9x2½x¾	T
49	.....(10) F-19	4300	Opt	Opt	19500	6500	8.25/20D	9.00/22	Con M-6330	6-4x4¾	330	5.5	238	103-3000	7-2⅝x12⅞	Y	Fu 5A330	10	Wis 5002L	2F	H	6.62-8.21	Wis F551H	L4IHV	335	578	a	TD	Opt	8x3½x¾	T
50	.....(10) F-23	5500	Opt	Opt	23500	9000	9.00/20D	9.75/22	Con 20-R	6-4¼x4¾	381	4.8	276	106-2600	7-2¾x13⅞	N	Fu 5A430	10	Wis 72300H	2F	H	5.61-8.40	Wis F213H	L4IHV	534	786	a	TD	Opt	8½x3½x⅞	T
51	.....(10) F-27	6800	Opt	Opt	27500	10000	9.75/22D	10.50/22	Con 21-R	6-4⅝x4¾	428	5.0	325	125-2400	7-2¾x13⅞	N	Fu 5A620	10	Wis 1337BH	2F	H	6.36-8.59	Wis F313H	L4IHV	625	976	a	TD	Opt	12¼x3¼x⅞	T
52	.....(10) F-35	8500	Opt	Opt	35500	12500	10.50/20D	11.25/24	Con 22-R	6-4½x5¼	501	5.9	400	150-2200	7-2¾x12⅞	N	Fu 5A620	10	Wis 1737KW	2F	H	6.39-9.16	Wis F417KW	Ws4IA	701	976	a	TD	Opt	12¾x3¼x⅞	T
♦ 53	F. W. D.....HS	**2960	132	156	15000	z6600	7.00/20D	8.25/20	Wau BK	6-3¾x4¼	282	5.7	189	84-2800	7-2¾x10¼	Y	Fu 5B33	5	Own HS	SF	H	7.10-7.85	Own HS	L4IHV	367	578	G	T4	67¾	9x3x¼	T
♦ 54	.....HA	**3420	132	156	17000	z6800	7.50/20D	9.00/20	Wau BZ	6-4x4¼	320	5.9	222	95-2800	7-2¾x10¼	Y	Fu 5B33	5	Own H	SF	H	7.30-8.06	Own H	L4IHV	391	660	G	T4	67¾	9x3x¼	T
♦ 55	.....HR	**3080	144	154	20000	z7800	7.50/20D	10.00/20	Wau MKR	6-4¼x4⅜	381	5.75	270	98-2500	7-2¾x12½	Y	Fu 5A43	5	Own H	SF	H	7.30-8.06	Own H	L4IHV	391	660	G	T4	79¾	9x3x¼	T
♦ 56	.....CU	**4920	150	182	22000	z9500	10.00/20S	Opt	Wau MZR	6-4¼x4⅜	404	5.6	288	106-2500	7-2¾x12½	Y	Fu 5A43	5	Own U	BF	H	6.72-8.84	Own U	L4IHV	496	867	G	T4	90	7x3x⅜	TC
♦ 57	.....CUA	**4640	150	182	22000	z9350	10.00/20S	Opt	Wau MZR	6-4¼x4⅜	404	5.6	288	106-2500	7-2¾x12½	Y	Fu 5A43	5	Own U	BF	H	6.72-8.84	Own U	L4IHV	496	867	G	T4	90	7x3x⅜	CC
♦ 58	.....SU	**5640	150	182	25000	z10150	12.00/20S	Opt	Wau SRLR	6-4⅝x5½	462	5.5	330	112-2400	7-3x10⅞	Y	Fu 5A62	5	Own U	BF	H	6.72-8.84	Own U	L4IHV	496	867	G	T4	90	7x3x⅜	C
♦ 59	.....SUA	**5440	150	182	25000	z10250	12.00/20S	Opt	Wau SRLR	6-4⅝x5½	462	5.5	330	112-2400	7-3x10⅞	Y	Fu 5A62	5	Own U	BF	H	6.72-8.84	Own U	L4IHV	496	867	G	T4	90	8x3x⅜	C
♦ 60	.....YU	**6300	150	182	26000	z10300	11.00/20D	Opt	Wau SRKR	6-4½x5½	517	5.5	369	126-2300	7-3x10⅞	Y	Own U	5	Own U	BF	H	6.72-8.84	Own U	L4IHV	496	867	G	T4	90	8x3x⅜	C
♦ 61	.....MJ6	**7040	150	180	30000	z13250	11.00/20D	Opt	Wau SRKR	6-4⅝x5½	517	5.5	369	126-2300	7-3x10⅞	Y	Own M	10	Wis 1337	2F	H	6.65-8.67	Wis 1337	L4IHV	578	976	G	T4	90	10x3x⅜	C
♦ 62	.....M6	**7850	150	180	32000	z13200	11.00/20D	Opt	Wau 140GK	6-4½x5½	525	5.8	410	138-2300	7-3¼x13⅜	Y	Own M	10	Wis 1757	2F	H	6.42-8.47	Wis 1757	L4IHV	578	976	G	T4	90	10x3x⅜	CC
♦ 63	.....M7	**8800	150	180	38000	z14000	13.00/20S	Opt	Wau 145GK	6-5¼x6	779	5.6	580	162-2000	7-3½x17¾	Y	Own M	10	Wis 1757	2F	H	6.42-8.47	Wis 1757	L4IHV	578	976	G	T4	90	10x3x⅜	CC
♦ 64	.....M10	**10400	150	180	42000	z14250	14.00/20S	Opt	Her HXE	6-5¾x6	935	5.5	610	198-2000	7-3½x16⅝	Y	Own M	10	Wis 1910	2F	H	7.16-9.23	Wis 1910	Ws4IA	639	976	G	T4	90	10x3x⅜	CT
♦ 65	.....(T) T26	**2990	132	156	(x)	z6600	7.00/20D	8.25/20	Wau BK	6-3¾x4¼	282	5.7	189	84-2800	7-2¾x10¼	Y	Fu 5B330	5	Own HS	SF	H	6.48-8.78	Own HS	L4IHV	367	578	G	T4	67¾	9x3x¼	T
♦ 66	.....(T) T30	**3450	132	156	(x)	z6800	7.50/20D	9.00/20	Wau BZ	6-4x4¼	320	5.9	222	95-2800	7-2¾x10¼	Y	Fu 5B330	5	Own H	SF	H	6.66-9.04	Own H	L4IHV	391	660	G	T4	67¾	9x3x¼	T
♦ 67	.....(T) T32	**4010	132	154	(x)	z7800	7.50/20D	10.00/20	Wau MKR	6-4¼x4⅜	381	5.7	270	98-2500	7-2¾x12½	Y	Fu 5A430	5	Own H	SF	H	6.66-9.04	Own H	L4IHV	391	660	G	T4	67¾	9x3x¼	T

♦ Denotes new models or change in specifications. * Includes price of cab. ** Prices not available at this time. (x) Tire capacity governs gross load. z All chassis weights include cab. * Prices subject to change without notice.
▲ This model has a Clark Automatic booster or auxiliary engine with bore of 3¼, stroke 4 in., rating 47 hp. at 3200, 94 ft. lb. torque at 1600 r.p.m. This, in combination with Chevrolet 235-cu. in. engine develops 286 ft. lb. torque and 140 hp.

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Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE Minimum Standard	WHEEL-BASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES D-dual rear S-single rear: Standard Front and Rear	TIRE SIZES: Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS: Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings: Number, Diameter and Length	Governor Standard	TRANSMISSION: Make and Model	Forward Sp'ds	REAR AXLE: Make and Model	Gear and Type	Drive & Torque	Gear Ratio Range in High	FRONT AXLE: Make and Model	BRAKES SERVICE: Make Location Type Operat'n	Lining Area	Drum Area	Drum Material	Hand Location Type	C-A Dimension (Min. Std. W. B.)	FRAME: Side Rail Dimensions	FRAME: Type
	Wheels Driven▼																														
1	Federal 296X4 4R	4895	162	215	32000	9200	8.25/20D	10.00/20	Her JXDF	6-4x4¼	320	5.9	244	95-2800	7-2½x10⅝	Y	Cla 205V	5	Tim SW3000H	WF	R	6.8-8.5	Tim 32514H	L6IHV	657	1168	a	TD	83	8⅛ x2⅞x¼	TB
2	.....356X4 4R	5550	167	220	36000	10700	9.00/20D	10.00/20	Her WXC3	6-4¼x4½	383	6.1	285	114-2800	7-2⅝x13¼	Y	Cla 270V	5	Tim SW3000H	WF	R	6.8-8.5	Tim 32515H	L6IHV	657	1168	a	TD	84	10¼x3⅛x⅛	TB
3	.....556X4 4R	6875	167	220	40000	11200	9.00/20D	11.00/20	Her WXLC3	6-4¼x4¾	404	6.3	307	125-2800	7-2⅝x13¼	Y	Cla 270V	5	Tim SW3000PA	WF	R	6.8-8.5	Tim 35000TW	Ws6IA	1034	1470	a	TD	84	10¼x3⅛x⅛	TB
4	.....626X4 4R	9245	168	221	5.000	14000	10.00/20D	12.00/20	Con 22RF	6-4½x5¼	501	5.2	400	150-2300	7-2¾x14½	Y	Cla 326V	5	Tim SW454W	WF	R	6.8-8.5	Tim 36000TW	Ws6IA	1026	1517	a	TD	84	10⅛x3⅛x⅛	TFB
5	(c.o.e.) 896X4 4R	4975	127	180	3.000	9100	8.25/20D	10.00/20	Her JXDF	6-4x4¼	320	5.9	244	95-2800	7-2½x10⅝	Y	Cla 205V	5	Tim SW3000H	WF	R	6.8-8.5	Tim 32515H	L6IHV	657	1168	a	TD	83	8⅛x2⅞x¼	TB
6	(c.o.e.) 906X4 4R	5750	140	185	36000	10600	9.00/20D	10.00/20	Her WXC3	6-4¼x4½	383	6.1	285	114-2800	7-2⅝x13¼	Y	Cla 270V	5	Tim SW3000H	WF	R	6.8-8.5	Tim 35011H	L6IHV	657	1168	a	TD	96	10x3½x¼	TB
7	(c.o.e.) 946X4 4R	7025	140	185	40000	11100	9.00/20D	11.00/20	Her WXLC3	6-4¼x4¾	404	6.3	307	125-2800	7-2⅝x13¼	Y	Cla 270V	5	Tim SW3000PA	WF	R	6.8-8.5	Tim 35000TW	Ws6IA	1034	1470	a	TD	96	10x3½x¼	TB
♦ 8	F. W. D....CU6X6	**	184	Opt	40000	14700	11.00/20D	Opt	Wau MZR	6-4¼x4¾	404	5.6	288	106-2500	7-2⅝x12½	Y	Own U	5	Wis SD252	2F	H	**-10.0	Wis 209	L6IHA	768	1300	G	T6	126	8x3x⅛	PC
♦ 9	.....MJ6X6	°11575	184	204	45000	18000	11.00/20D	Opt	Wau 8RKR	6-4½x5½	517	5.5	369	126-2300	7-3x10½	Y	Own M	10	Wis SD352	2F	H	**-8.6	Wis 1337	Ws6IA	1080	1680	G	T6	126	10⅛x3x⅛	PC
♦ 10	.....M6X6	°14555	204	Opt	55000	19000	14.00/20S	Opt	Wau 145GK	6-5¼x6	779	5.6	550	162-2000	7-3½x17¾	Y	Own M	10	Wis SD520	2F	H	**-10.0	Wis 1910	Ws6IA	1080	1680	G	T6	126	10⅛x3x⅛	PC
♦ 11	Hug.....99 4R	9000	175	175	64700	18100	12.00/20D	12.00/20	Wau 6RBR	6-5x5¾	677	4.6	492	144-1800	4-3¼x11⅝	Y	Fu 8A86	8	Tim SD454	2F	T	7.33-10.2	Shu 1673	Ws6IA	1027	1581	a	TD	92	9x4⅛x⅛	I
♦ 12	.....(D) 99 4R	9635	175	175	64700	18600	12.00/20D	12.00/20	Cum HB600	6-4⅞x6	672	17.	500	150-1800	7-4x18⅝	Y	Fu 8A86	8	Tim SD454	2F	T	7.33-10.2	Shu 1673	Ws6IA	1027	1581	a	TD	92	9x4⅛x⅛	I
13	.....998 4R	11000	175	175	75000	20000	12.00/20D	12.00/20	Wau 6RBR	6-5x5¾	677	4.6	480	144-1800	4-3½x11⅝	Y	Fu 8A86	8	Tim SD520	2F	T	7.33-10.2	Shu 1673	Ws6IA	1027	1581	a	TD	92	9x4⅛x⅛	I
14	....(D) 998 4R	11635	175	175	75000	20545	12.00/20D	12.00/20	Cum HB600	6-4⅞x6	672	17.	500	150-1800	7-4x18⅝	Y	Fu 8A86	8	Tim SD520	2F	T	7.33-10.2	Shu 1673	Ws6IA	1027	1581	a	TD	92	9x4⅛x⅛	I
15	**International (11)**																														
16	....D-186-T 2F	1475	148	191	18000	5290	6.50/20D	7.50/20	Own HD232	6-3⅞x4½	233	6.0	170	81-3200	4-2⅝x6⅛	N	Own H41A	4	Own RT1200	FB	HT	6.17-6.66	Own F301	B6IHV	466	648	c	PX	77	8¼x3⅛x⅛	T
17	...DS-186-T 2F	1590	148	191	18000	5390	6.50/20D	7.50/20	Own HD232	6-3⅞x4½	233	6.0	170	81-3200	4-2⅝x6⅛	N	Own H41A	4	Own RT2200	dFB	HT	5.14-8.81	Own F301	B6IHV	466	648	c	PX	77	8¼x3⅛x⅛	T
18	....D-216-T 2F	1760	176	194	21000	6270	7.00/20D	8.25/20	Own FAB241	6-3⅝x4½	242	5.8	176	84-3200	4-2⅝x5⅛	N	Own H41A	4	Own RT1400	FB	HT	6.50-7.166	Own F400	B6IHV	565	780	c	PX	102	8⅛x3⅛x⅛	T
19	...DS-216-T 2F	1945	176	194	21000	6395	7.00/20D	8.25/20	Own FAB241	6-3⅝x4½	242	5.8	176	84-3200	4-2⅝x5⅛	N	Own H41A	4	Own RT2410	dFB	HT	5.63-8.52	Own F400	B6IHV	565	780	c	PX	102	8⅛x3⅛x⅛	T
20	....D-216-F 4R	2185	151	184	21000	6650	7.00/20D	8.25/20	Own FAB241	6-3⅝x4½	242	5.8	176	84-3200	4-2⅝x5⅛	N	Own H41A	4	Own RF1420	FB	HT	5.85-7.37*	Own FXX400	B6IHV	565	780	c	PX	77	8⅛x3⅛x⅛	T
21	....D-246-T 2F	2850	161	215	24000	8065	7.50/20D	9.00/20	Own FBB318	6-3⅞x4½	318	5.4	241	100-2800	7-2¾x11⅛	Y	Own F51	5	Own RT1500	FB	HT	5.62-7.16	Own FX500	B6IHV	589	855	c	PX	84	9¼x3⅛x⅛	T
22	...DS-246-T 2F	3060	161	215	24000	8065	7.50/20D	9.00/20	Own FBB318	6-3⅞x4½	318	5.4	241	100-2800	7-2¾x11⅛	Y	Own F52C	5	Own RT2500	dFB	HT	5.62-8.74	Own FX500	B6IHV	589	855	c	PX	84	9¼x3⅛x⅛	T
23	...DR-246-T 2F	3015	161	215	24000	8200	7.50/20D	9.00/20	Own FBB318	6-3⅞x4½	318	5.4	241	100-2800	7-2¾x11⅛	Y	Own F51	5	Own RT1550	2FB	HT	7.10-8.50	Own FX500	B6IHV	589	855	c	PX	84	9¼x3⅛x⅛	T
24	▲(D)DD246T 2F	4200	161	215	24000	9025	7.50/20D	9.00/20	Cum HB400	4-4⅞x6	448	17.	330	100-1800	5-4½x11½	Y	Own F52	5	Own RT1500	FB	HT	5.62-8.74*	Own FX500	B6IHV	589	855	c	PX	84	9¼x3⅛x⅛	T
25	....D-246-F 4R	3150	161	215	24000	8320	7.50/20D	9.00/20	Own FBB318	6-3⅞x4½	318	5.4	241	100-2800	7-2¾x11⅛	Y	Own F51	5	Own RF1401	FB	HT	7.19-8.19*	Own FX500	B6IHV	600	816	c	PX	84	9¼x3⅛x⅛	T
26	▲(D)DD246F 4R	4500	161	215	24000	9170	7.50/20D	9.00/20	Cum HB400	4-4⅞x6	448	17.	330	100-1800	5-4½x11½	Y	Own F52	5	Own RF1401	FB	HT	7.19-8.19	Own FX500	B6IHV	600	816	c	PX	84	9¼x3⅛x⅛	T
27	...DR-346-T 2F	5000	161	215	34000	10125	9.00/20D	9.75/20	Own FBB401	6-4½x5	401	5.2	308	114-2600	7-2¾x11⅛	Y	Own F52	5	Own RT1660	2FB	HT	5.40-9.03	Own F700	T6IA	801	1192	G	PX	84	10¼x3⅛x⅜	T
28	▲(D)DRD346T 2F	6300	161	215	34000	11250	9.00/20D	9.75/20	Cum HB400	4-4⅞x6	448	17.	330	100-2800	5-4½x11½	Y	Own F52	5	Own RT1660	2FB	HT	5.40-9.03	Own F700	T6IA	801	1192	G	PX	84	10¼x3⅛x⅜	T
29	....D-346-F 4R	5750	161	215	34000	11080	9.00/20D	9.75/20	Own FBB401	6-4½x5	401	5.2	308	114-2600	7-2¾x11⅛	Y	Own F52	5	Own RF1610	FB	HT	6.22-7.93*	Own F700	T6IA	801	1192	G	PX	84	10¼x3⅛x⅜	T
30	(D)DD-346-F 4R	7365	161	215	34000	12280	9.00/20D	9.75/20	Cum HB600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Own F54	5	Own RF1610	FB	HT	6.23-7.12*	Own F700	T6IA	801	1192	G	PX	84	10¼x3⅛x⅜	T
31	DR-426-F 4R	7500	161	233	42000	13080	9.75/20D	10.50/20	Own FBB450A	6-4¾x5	451	5.2	331	120-2400	7-2⅞x11⅛	Y	Own RF1701	2	FB	HT	6.52-10.9	Own F800	T6IA	801	1192	G	PD	84	11¼x3⅛x⅜	T
32	(D)DRD-426-F 4R	9030	161	233	42000	14580	9.75/20D	10.50/20	Cum HB600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Own F54B	5	Own RF1701	2FB	HT	6.52-10.9	Own F800	T6IA	801	1192	G	PD	84	11¼x3⅛x⅜	T
33	AR-626-F 4R	12500	180	253	62000	18155	9.75/24D	11.25/24	Own FEB	6-5x5½	648	4.4	460	140-2100	7-3¼x17¾	Y	Own H7	5	Own 1585	2FB	HT	5.27-11.39	Own F910	T6IA	102	1520	G	PD	92	14x3½x¾	TL
34	(D)ARD626F 4R	13485	180	253	62000	18300	9.75/24D	11.25/24	Cum HB600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Own H7	5	Own 1585	2FB	HT	5.97-11.39	Own F910	T6IA	102	1520	G	PD	92	14x3½x¾	TL
35	Ken-.. (D) 509 4R	7398	212	254	35000	10350	9.00/20D	10.00/22	Cum HB4	4-4⅞x6	448	17.	335	100-1800	7-4¼x11⅛	Y	Fu 5A620	5	Tim SW252	WF	R	6.20-9.25	Tim 35100	L6IHV	668	1192	a	TD	102	7½x3¼x⅛	C
36	worth. (D) 510 2F	9132	221	247	39000	12630	9.00/22D	10.00/22	Cum HB6	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	BL 7641	4	Tim T18000	CF	R	6.04-10.7	Tim 36000	Ws4rIA	692	1030	a	TD	134	9½x3¼x⅛	C
37	....(D) 512 4R	8751	205	235	38000	13500	9.00/20D	10.00/22	Cum HB6	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	BL 7641	4	Tim SW252	WF	R	6.20-9.25	Tim 36000	Ws4rIA	800	1194	a	TD	120	9½x3¼x⅛	C
38	....(D) 520 2F	8280	214	239	40300	12200	9.00/20D	11.00/22	Cum HB6	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	BL 7641	4	Tim 75738	2F	H	6.85-9.41	Tim 36000	Ws4rIA	782	1158	a	TD	127	9½x3¼x⅛	C
39	....(D) 522 2F	8464	214	239	46000	12150	9.00/20D	11.00/22	Cum HB6	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	BL 7641	4	Tim 76800	2F	H	6.02-9.2	Tim 36000	Ws4rIA	782	1158	a	TD	127	9½x3¼x⅛	C
40	....(D) 523 4R	9606	214	239	42000	13700	9.00/20D	11.00/24	Cum HB6	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	BL 7641	4	Tim SW3000	WF	R	5.40-10.2	Tim 36000	Ws4rIA	800	1194	a	TD	127	9½x3¼x⅛	C
41	....(D) 524 4R	9881	214	239	54000	14700	10.00/20D	11.00/24	Cum HB6	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	BL 7641	4	Tim SW452	WF	R	6.0-11.7	Tim 36000	Ws4rIA	980	1450	a	TD	127	9½x3¼x⅛	C
42	.....527 4R	6239	204	234	35000	11000	9.00/20D	10.00/22	Bud LO525	6-4½x5½	525	5.5	385	135-2200	7-3x11½	Y	Fu 5A-620	5	Tim SW-252	WF	R	6.20-9.25	Tim 35100	Ws4rIA	800	1194	a	TD	120	7½x3¼x⅛	C
43	.....528 4R	7654	211	236	39000	12400	10.00/20D	11.00/24	Bud LO525	6-4½x5½	525	5.5	385	135-2700	7-3x11½	Y	Fu 5A-620	5	Tim SW3000	WF	R	5.40-10.2	Tim 35100	Ws4rIA	800	1194	a	TD	127	9½x3¼x⅛	C
44	....(D) 546 4R	7255	201	234	33500	10950	9.00/20D	10.00/22	Cum AA6	4-4x5	377	17.	270	105-2300	7-3½x	Y	Fu 5A-430	5	Tim SW252	WF	R	6.20-9.25	Tim 32502	L6IHV	636	1092	a	TX	120	7½x3¼x⅛	C
45	.....556 4R	5701	204	234	35000	10750	9.00/20D	10.00/22	Her WXLC3	6-4¼x4¾	404	5.5	294	118-2800	7-2⅝x10⅛	Y	Fu 5A430	5	Tim SW252	WF	A	5.00-11.0	Tim 35100	L4rIHV	800	1194	a	TX	120	7½x3¼x⅛	C
	Marmon-Herr.																														
46	.....D8D200-6	**	167	Op	19500	8065	7.00/20D	7.00/20	Her JXC	6-3¾x4¼	282	5.3	196	84-2800	7-2½x10⅛	N	Ful 5A33	5	Wis MH1100	2F	R	*-7.36	WH 110	L6IH	549	930	a	TX	84	7⅛x2½x¼	P
47	.....D8D300-6	**	167	Op	25500	9025	7.50/20D	8.25/20	Her JXD	6-4x4¼	320	5.3	224	95-2800	7-2½x10⅛	N	Ful 5A33	5	Wis MH1111	2F	R	*-7.66	WH 111	L6IH	600	1055	a	TX	84	7⅛x2½x¼	P
48	.....D8D400-6	**	158	Op	26500	9600	8.25/20D	9.00/20	Her WXC3	6-4¼x4½	383	5.0	260	106-2800	7-2⅝x13¼	Y	Ful 5A430	5	Wis MH1111	2F	R	*-9.33	WH 111	L6IH	600	1055	a	FD	72	9⅛x3x⅛	P
49	.....D8D500-6	**	158	Op	32500	10400	8.25/22D	9.00/20	Her WXLC3	6-4¼x4¾	404	5.0	293	118-2800	7-2⅝x13¼	Y	Ful 5A430	5	TW MH1133	2F	R	*-9.33	WH 113	Ws6IA	726	1300	a	FD	72	9⅛x3x⅛	P
50	.....D8D600-6	**	173	Op	32500	12200	9.00/20D	9.00/20	Her RXB	6-4½x5¼	501	5.4	330	110-2200	7-3x13¼	Y	Ful 5A620	5	TW MH1133	2F	R	*-8.43	WH 113	Ws6IA	726	1300	a	FD	84	9⅛x3x⅛	P
51	.....D8D800-6	**	173	Op	42000	14475	9.75/20D	9.75/22	Her RXC	6-4⅝x5¾	529	4.9	390	131-2200	7-3x13¾	Y	Ful 5A620	5	TW MH1144	2F	R	*-8.14	WH 114	Ws6IA	1056	1626	a	FD	84	10⅛x3x⅛	P
52	.....D8D900-6	**	192	Op	42000	17590	9.75/20D	9.75/22	Her HXD	6-5½x6	855	4.5	555	180-2200	7-3½x16⅝	Y	Ful 4A86	4	TW MH1144	2F	R	*-9.11	WH 114	Ws6IA	1056	1626	a	FD	96	10⅛x3x¼	P
53	.....D8D1000-6	**	198	Op	52000	19200	10.50/20D	10.50/24	Her HXE	6-5¼x6	935	4.5	610	198-2200	7-3½x16⅝	Y	Ful 4A86	4	TW MH1155	2F	R	*-9.11	WH 115	Ws6IA	1056	1626	a	FD	102	10⅛x3x⅛	P
54	(D) DD8D200-6	**	167	Op	19500	8465	7.00/20D	7.00/20	Her DJXB	6-3½x4½	260	14.	178	79-2600	7-3x10⅛	N	Ful 5A33	5	W MH1100	2F	R	*-6.66	WH 110	L6IH	549	930	a	TX	84	7⅛x2½x¼	P
55	(D) DD8D300-6	**	167	Op	25500	9425	7.50/20D	8.25/20	Her DJXC	6-3¾x4¼	298	14.	205	85-2600	7-3x10⅛	N	Ful 5A33	5	W MH1111	2F	R	*-6.41	WH 111	L6IH	600	1055	a	TX	84	7⅛x2½x¼	P
56	(D) DD8D600-6	**	173	Op	32500	12800	9.00/20D	9.00/20	Her DRXB	6-4⅝x5¼	474	14.	360	121-2200	7-3x13¼	Y	Ful 5A620	5	TW MH1133	2F	R	*-7.66	WH 113	Ws6IA	726	1300	a	FD	84	9⅛x3x⅛	P
57	(D) DD8D800-6	**	173	Op	42000	15060	9.75/20D	9.75/22	Her DRXB	6-4⅝x5¾	474	14.	350	124-2200	7-3x13¾	Y	Ful 5A620	5	TW MH1144	2F	R	*-8.14	WH 114	Ws6IA	1056	1626	a	FD	84	10⅛x3x⅛	P
58	(D) DD8D900-6	**	192	Op	42000	18325	9.75/20D	9.75/22	Her DHXB	6-5x6	707	14.	530	176-1800	7-3¼x17	Y	Ful 4A86	4	TW MH1144	2F	R	*-8.14	WH 114	Ws6IA	1056	1626	a	FD	96	10⅛x3x⅝	P
59	(D) DD8D1000-6	**	198	Op	52000	19950	10.50/20D	10.50/24	Her DHXB	6-5x6	707	14.	530	176-1800	7-3¼x17	Y	Ful 4A86	4	TW MH1155	2F	R	*-8.14	WH 115	Ws6IA	1056	1626	a	FD	102	10⅛x3x⅝	P
60	.....(c) JJ5-6	**	156	156	22000	5875	6.00/20D	7.50/20	Ford V8	8-3⅛x3¾	239	6.1	170	95-3600	3-2.5x4.71	N	Ford	4	Tim Ford	8F	R	**-6.67	Own IX4-11	FO6IH	503	836	ac	TX	82½	7½x3x¼	TL
61	.....(c) JJ6-6	**	180	180	22000	5997	6.00/20D	7.50/20	Ford V8	8-3⅛x3¾	239	6.1	170	95-3600	3-2.5x4.71	N	Ford	4	Tim Ford	8F	R	**-6.67	Own IX4-11	FO6IH	503	836	ac	TX	106½	7½x3x¼	TL
62	(c) (c.o.e.) JJ5-6	**	156	156	22000	6045	6.00/20D	7.50/20	Ford V8	8-3⅛x3¾	239	6.1	170	95-3600	3-2.5x4.71	N	Ford	4	Tim Ford	8F	R	**-6.67	Own IX4-12	FO6IH	503	836	ac	TX	115	7½x3x¼	TL
63	(c) (c.o.e.) JJ6-6	**	180	180	22000	6167	6.00/20D	7.50/20	Ford V8	8-3⅛x3¾	239	6.1	170	95-3600	3-2.5x4.71	N	Ford	4	Tim Ford	8F	R	**-6.67	Own IX4-12	FO6IH	503	836	ac	TX	139	7½x3x¼	TL
	Sterling																														
64	(16)HBT128 2F	**	181	227	32000	10625	9.00/20D	9.75/20	Wau 6MZR	6-4¼x4¾	404	5.3	286	99-2400	7-2⅝x12½	Y	Fu 5A430	5	TimSBT252H	8F	L	5.57-7.80	Tim 35000N	L4rIHV	504	968	a	TX	102	9x3¼x¼	A
65	(15-16)HW8128 4R	**	181	227	32000	10775	9.00/20D	9.75/20	Wau 6MZR	6-4¼x4¾	404	5.3	286	99-2400	7-2⅝x12½	Y	Fu 5A430	5	Tim SW251H	WF	L	6.20-10.40	Tim 35000N	L4rIHV	504	968	a	TX	102	9x3¼x¼	A
66	(15-16)JW8160 4R	**	201	241	40000	12775	9.75/20D	10.50/20	Wau6SRKR	6-4½x5½	517	5.5	368	125-2300	7-3x13¼	Y	Fu 5A62	5	Tim SW352W	WF	L	6.00-10.67	Tim 26452N	Ws4rIA	800	1348	a	TX	122	9¼x3½x⅜	A
67	(15-16)HW8235S4R	**	201	241	50000	13575	10.50/20D	10.50/24	Wau6SRKR	6-4½x5½	517	5.5	368	125-2300	7-3x13¼	Y	Fu 5A62	5	Tim SW452W	WF	L	6.00-10.25	Tim 27452N	Ws4rIA	800	1316	a	TX	122	9¼x3½x⅜	A
68	(16)HCS235 4R	**	211	251	52000	15250	9.75/22D	10.50/24	Wau6SRKR	6-4½x5½	517	5.5	369	125-2300	7-3x13¼	Y	Fu 5A62	15	Own SR255W	CD	R	10.73-13.25	Tim 27452N	Ws4rIA	868	1368	s	JX	123	9¼x3½x⅜	A
69	(16)HCS265 4R	**	211	251	60000	16400	10.50/20D	11.25/24	Wau 6RBR	6-5x5¾	677	5.3	492	152-2200	4-3½x11	Y	Fu 4B86	12	Own SR265W	CD	R	10.76-13.56	Tim 27452N	Ws4rIA	868	1368	s	JX	123	9¼x3½x⅜	A

▲ International—6-cylinder Diesel engine Model AA-600 available in these chassis. Diesel Model HB-600 also available in DRD-346-T. ** Prices quoted on application. * Prices subject to change without notice. ** Prices not available at this time.

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TRAINING MECHANICS

(CONTINUED FROM PAGE 21)

brakes should be included in a prepared discussion. The discussion should cover a variety of "brake rigging," emphasizing the importance of rugged design in the foundation brake and stressing the necessity for periodic lubrication at all rocking points, and for modifying brake adjustments to assure an "all shoe, drum contact" at identical pressures.

Samples of brake lining that failed to deliver a satisfactory life expectancy, broken, checked and scored drums and prematurely worn hinge pins and bushings are excellent models to demonstrate the necessity for careful and well planned brake maintenance.

The main aims of preliminary instruction are: to familiarize the students with all the units they later may be called upon to maintain, to impress upon them the necessity for good workmanship and accuracy, to teach them the mechanical functions of each unit of the vehicle and its relationship to others, and to establish a preliminary rating for each member of the group.

A partial list of subjects in detail, for preliminary instruction could include: nonfriction bearings; engine bearings; valves and adjustments; exhaust system; engine cooling system; body types (riveted and welded); safety doors, adjustment and control; body heating system; body ventilating system; chassis lubrication and maintenance of attachments and accessories; functions of the front axle, including wheel alignment (camber, castor and toe-in); rear axles types (adjustments of single and double reduction); air brakes (functions including compressor, brake valves, piping, foundation brake and linings); functions and care of electric power generator and motor; functions and care of electric lighting generator system, including regulation, control, wiring and lights; functions of electric starter system (adjustment and control); functions of diesel engine, maintenance and care; functions of diesel fuel injection equipment (jerk pump and combination systems).

2. Division Into Selected Groups

After the first few classes the group will divide without effort, other than close contact on the part of the instructors, into smaller groups according to individual ability to grasp quickly the information distributed. The first alignments will be temporary with regard to some members. Later, as working members of the organization, they will be found in any of five (5) ratings, according to bent, gift or general fitness to perform the following work:

Class One: Lubrication, fueling and simple inspections.

Class Two: General inspections.

Class Three: Special inspections.

Class Four: General and electric repairs.

Class Five: Engine and injection equipment repairs.

The groups outlined are "ratings" or "classes" in the working organization and, according to the plan, a knowledge of the requirements of the lower "rating" or "class" is necessary to become eligible for a higher "rating" or "class."

With the above ratings in mind, every effort should be made toward training individuals as quickly as possible for each class. Division of the mass into selected groups is particularly important, and if certain individuals cannot grasp the details of the more complicated preliminary instruction they will probably fail to comprehend all instruction beyond Class One or the simple requirements of Class Two. All such students should be assigned immediately to Class One working instructors. The same procedure should be carried out with all individuals when they reach the maximum point in their ability to learn without individual instruction. The net result of these transfers is a reduced group in the first phases of instruction where the greatest expense is involved. Those transferred will continue to receive training under working instructors, and will still be eligible for a higher classification if they prove competent.

The requirements of Class One are not rigid. A knowledge of all the lubrication points of each vehicle of the fleet, the type of lubricant recommended for each point,

(TURN TO PAGE 60, PLEASE)

"Now she's ready at work making deliveries"
Why this stop?
"Sure was a hearty lunch"
"Migosh! It waited an hour for the load!"
Fine! 3 hours of steady deliveries
"It had start! Didn't even leave the garage until 8"
"Standing idle for an hour! Wonder why?"
Reports at 6:30 Ugh - overtime again"
"Hello! Truck used last night. Why?"
DATE 2/11 NAME Frank

Now You can "SEE" When YOUR Truck Wastes Time!

You Can Easily "Keep an Eye On It" All Day Even When It's Out of Your Sight

- Busy time—Idle time! You get it at a glance.

Those blank spaces on the chart show idle time, at 3 or 4 dollars an inch! You knew some of it was going on. But when you SEE these delays *staring out at you*—well, then you actually DO something about it.

Truck Scarcity? Whether we have it or not every truck *must* produce. We can't afford these days to be easy going about it. The *Servis Recorder* gives you all the information you need.

Write for free booklet: *"Ten Ways of Getting More Work Out of Motor Trucks."*

Shows
BUSY TIME
IDLE TIME
OVERTIME
ETC.

THE SERVICE RECORDER CO. • 1375 Euclid Ave. • Cleveland, Ohio

The Servis Recorder
Tells Every Move Your Truck Makes

ON THE PENNSYLVANIA TURNPIKE

BRAKE DRUMS MUST BE GOOD!

That's Why Inter-State USE Meehanite

As one of the country's largest motor carriers, Inter-State System features:

1. Time scheduled trips
2. Insured cargoes
3. Modern equipment
4. Free pick-up and delivery

As one of metallurgy's leading developments, MEEHANITE brake drums provide:

1. Higher resistance to heat
2. Smooth braking action
3. Tough wearing qualities
4. Longer drum and lining life

All these add up to Safety and Economy—the goal of all operators, whether they run one truck or a thousand. MEEHANITE brake drums are cast so that the structure, content, and properties of the metal are controlled to produce the required drum qualities.

WRITE FOR FOLDER OF BRAKE DRUM ADVERTISEMENTS AND ARTICLES

MEEHANITE RESEARCH INSTITUTE
311 ROSS STREET · PITTSBURGH, PA.

When You Specify MEEHANITE You Profit from Over 2½ Million Man Hours' Research in Cast Metals

Take Your Casting Problems to a Meehanite Foundry!

Ansonia, Conn.	Farrel-Birmingham Co., Inc.
Bethayres, Pa.	H. W. Butterworth & Sons Co.
Bridgewater, Mass.	The Henry Perkins Co.
Buffalo, N. Y.	Pohlman Foundry Co., Inc.
Charleston, W. Va.	Kanawha Manufacturing Co.
Chattanooga, Tenn.	Ross-Meehan Foundries
Chicago, Ill.	Greenlee Foundry Company
Cincinnati, Ohio	Cincinnati Grinders Incorporated
Cincinnati, Ohio	The Cincinnati Milling Machine Co.
Cleveland, Ohio	Fulton Foundry & Machine Co.
Denver, Colo.	The Stearns-Roger Mfg. Co.
Detroit, Mich.	Atlas Foundry Co.
Flint, Mich.	General Foundry & Mfg. Company
Hamilton, Ohio	Hamilton Foundry & Machine Co.
Irvington, N. J.	Barnett Foundry & Machine Co.
Los Angeles, Calif.	Kinney Iron Works
Milwaukee, Wis.	Koehring Company
Mt. Vernon, Ohio, Grove City, Pa.	Cooper-Bessemer Corporation
New York, N. Y.	The American Brake Shoe & Foundry Co.
Oakland, Calif.	Vulcan Foundry Company
Orillia, Canada	E. Long, Ltd.
Philadelphia, Pa.	Florence Pipe Foundry & Machine Co., (R. D. Wood Company, Selling Agents)
Phillipsburg, N. J.	Warren Foundry & Pipe Corp.
Pittsburgh, Pa.	Meehanite Metal Corporation
Pittsburgh, Pa.	Rosedale Foundry & Machine Co.
Rochester, N. Y.	American Laundry Machinery Co.
St. Louis, Mo.	Banner Iron Works
St. Paul, Minn.	Valley Iron Works
London, Eng.	The International Meehanite Metal Co., Ltd.
Waterloo, N. S. W.	Australian Meehanite Metal Co., Ltd.
Johannesburg, South Africa,	Meehanite Metal Co. (S.A.) (Pty.) Ltd.

(CONTINUED FROM PAGE 58)

and the type of dispensing equipment provided to apply each lubricant, are the main requirements. The simple inspections will require fueling vehicles, lube oil and filter inspection, air cleaner inspection, fan belt inspection, and watering batteries and radiators. The ability to make renewals of lube oil and fuel filter elements, and fan belts, is a requirement, as is the ability to drain and fill crankcases and compressors.

Class Two requirements are more exacting and require knowledge of the working details and adjustments necessary to maintain in running order certain parts of engines, axles, brakes, chassis, running gear, tires and the body of the various vehicles in the fleet. In case of excess wear or failure of certain units, Class Two forces will only be required to remove the rejected material and install new or repaired material.

In detail, this classification will require the knowledge necessary to perform the following:

Unit No. 1—Engine

a. Adjust valves only.
b. Remove and replace injectors only.
c. Remove and replace cylinder heads only.
d. Remove and replace lubricating oil pump, strainer and cooler (clean only).
e. Remove and replace lube oil filter only.
f. Remove and replace air cleaner and silencer (clean only).
g. Remove and replace fuel pump only.
h. Remove and replace fuel oil filter (clean only).
i. Remove and replace water pump only.
j. Remove and replace radiator only.
k. Remove and replace fan only.
l. Remove, clean and replace oil pan.
m. Remove and replace air compressor only.

Units No. 2—Axles (Front and Rear)

a. Remove, replace and adjust wheels or wheel assemblies.
b. Remove, rebush and replace steering knuckle assemblies.
c. Remove, replace and adjust axle steering mechanisms.
d. Remove, replace, reline and adjust brakes.
e. Remove and replace brake drums.
f. Remove and replace differential carrier only.
g. Remove and replace axle shafts only.

Units No. 3—Chassis and Running Gear

a. Remove and replace springs only.
b. Remove and replace propeller shafts only.
c. Remove and replace air, oil, water and fuel piping.

Unit No. 4—Tires

a. Remove and replace tires mounted on rims or wheels only. (This requirement may be made to include removal of tires from rims if a tire mileage contract is not involved.)

Unit No. 5—Body

a. Remove and replace seat frames and cushions, grab rails, floor coverings, reflectors, mirrors and heating and ventilating equipment.

Class Three inspections will require the technique necessary to remove and replace any unit as an assembly from a vehicle, and correctly hook up all controls to the unit and make adjustments to the controls if necessary. Further, Class Three requires the knowledge necessary to:

1. Remove and replace all engine parts, including main and connecting rod bearings and crankshafts. The requirement does not include machining or repairs to the parts, but does include fitting. Machining and repairs come under Class Five.
2. Remove and replace all axle parts. The requirement does not include rear axle differential adjustment which comes under Class Four.
3. Check, and adjust and replace brushes, fuses or bulbs (only) in all electric equipment, including power motor, starter, generators (light and power), voltage regulator, heating and ventilating motors, lights (inside, outside and head lights), fuses and switches (this require-

(TURN TO PAGE 62, PLEASE)

Dear Santa:-
Please have my boss specify A.S.F. Safety 5th wheels on all our trucks. Tell him there are 3 sizes and 3 types to choose from - a wheel for every purpose.
Will B. Safe
A-S-F FIFTH WHEEL
AMERICAN STEEL FOUNDRIES
East Chicago, Indiana

WEED TIRE CHAINS

Maintain Schedules

Never were fast, dependable schedules so important as today. Government and business lean heavily on truck and bus transportation. Men who have to "keep them rolling" are checking up chains. They see that their vehicles have chains ready—for immediate application when snow threatens.

These 4 features of WEED AMERICAN BAR-REINFORCED TIRE CHAINS have won the confidence and patronage of truck and bus officials: **1. Bar-Reinforced Cross Links. 2. Weedalloy**—a tougher metal. **3. Patented Lever-Lock End Hooks**—positive fastening. **4. Side Chains** welded and hardened to resist wear.

To be sure you get more than double mileage, greater traction and greater safety specify WEED AMERICANS when you order. Maintain schedules. Reduce accidents. Cut costs.

AMERICAN CHAIN & CABLE COMPANY, Inc. • YORK, PA.

In Business for Your Safety

(CONTINUED FROM PAGE 60)

ment prohibits repairs to electric equipment).

4. Check and adjust (only) door opening devices and controls, heating devices and fare collection devices. (Repairs under Class Four.)

All work in Class Four and Class Five requires special machine tools, and such work should be removed from the center of operating activities. The requirements of both classes are rigid and will cover the knowledge necessary to do highly specialized work. The personnel will be made up of small groups of specialists in machine work of many types, engine rebuilding and repairs, sheet metal work, welding, injection equipment rebuilding and repairs, carpentry, magnaflux inspections, metal spraying and electric equipment rebuilding and repairs.

The varying and increasingly rigid requirements of the first three working classes should, within two or three months, absorb all of the mass group. This may require both instruction periods and work periods, due to the caliber of the group itself. In other words, they may require actual working instruction to properly absorb the mass oral instruction.

Class Four will require additional experience and considerable more time with instructors. However, once the individual reaches proficiency in Class Three, the step to Class Four is possible with special instruction.

Compared to the whole organization, the number of workers required in Class Four will be small and each individual will be a specialist. Under these circumstances few workers will be proficient in all the requirements of this class, particularly the carpentry, sheet metal and welding requirements.

3. Training by Working Instructors

This phase of the plan is also important and depends on the selection of proper instructors for much of its success. Working instructors must be chosen who can impart the knowledge they possess to fellow workers in a manner acceptable to the group. This difficult task is best accomplished by older men. Age, with experience, is accepted by the group as the badge of authority. The task of picking working instructors may not be as difficult as it seems, for older men can often be chosen who are proficient only in the work they are to teach.

Instruction should begin with the proper use of the tools necessary for the requirements of the class involved. Much abuse to vehicles and tools will be avoided later if this subject is duly emphasized. Hammers, wrenches, chisels, pinch bars and punches were designed for certain types of work, and no doubt should exist as to which tool should be used for each job. Working instruction should take the form of working demonstrations in an approved manner by the instructors and duplication of the work by the novice, followed by a check for accuracy by the instructor. As the novice improves he may be allowed to proceed unattended. A check for accuracy should be made later with the student present.

The group in training can be divided into as many units as desired, depending on the number of working instructors available. More useful work can be accomplished with small groups. In any case, an accurate record must be kept of the type of work in which each individual has received instruction, the extent of his instruction, and his grading in each. When he becomes proficient at one task, he should be shifted to another, and if his interest is to be retained the tasks should become more difficult as he proceeds. The requirements of Class Two and Class Three are listed according to the importance of the unit; the more difficult tasks will be encountered with the first unit (the engine) and so on down to the least difficult (the body).

No attempt has been made in the paper to cover variations of a plan, intended to train automotive mechanics in straight maintenance methods, at a fixed base of operations. There is no reason, apparently, why the plan should not work satisfactorily with any number of variations, if the main points of the scheme are followed.

4. Advance Instruction

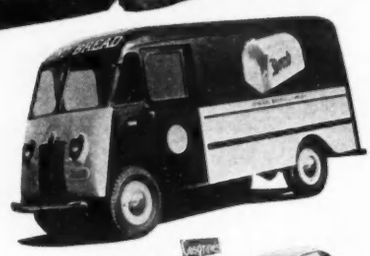
There is a very distinct advantage to a training plan of this type, due to the fact that only the most modern, approved methods are taught to the student. Crude, outmoded and inefficient methods need not ap-

(TURN TO PAGE 64, PLEASE

Meet VARYING NEEDS IN WIDELY DIFFERING VEHICLES WITH EBERHARD STANDARD ITEMS

AMONG THE HUNDREDS OF ITEMS ARE

HINGES
LOCK HANDLES
LATCHES
DOOR IRONS
DOOR CONTROLS
SEAT IRONS
LOCK HANDLES
SEAT PEDESTALS
REFRIGERATOR LOCKS
PANEL DOOR LOCKS
VAN BODY LOCKS
SLIDING DOOR LOCKS
LADDER HOLDERS
ETC.



VANETTE BY TRANSPORTATION ENGINEERS, INC. DETROIT

TRAILER BY WILSON TORONTO, ONTARIO

MARINE CORPS TRUCK BUILT BY THE FOUR WHEEL DRIVE COMPANY, CLINTONVILLE, WIS.

Consult Your CATALOG

EBERHARD MANUFACTURING CO.

DIVISION OF
THE EASTERN MALLEABLE IRON CO. • CLEVELAND, O.

DO-RAY TIGER-EY (PLASTIC)

PLASTIC REFLEX TRUCK DEVICE

NO. 100
(PLASTIC)

The DO-RAY TIGER-EY PLASTIC REFLEX TRUCK LENS takes its rightful place as an outstanding number in the complete line of DO-RAY SAFETY LIGHTING and EQUIPMENT. The reflective qualities of this patented plastic lens are truly amazing. It provides a brilliant reflection for hundreds of feet. Like all other DO-RAY devices the TIGER-EY LENS is an indispensable aid in the prevention of accidents. *Available in red or amber lenses.* Sturdy! Efficient! Durable!

No. 100-O (Oval) List Price 90c

No. 100-R (Round) List Price 90c **No. 100-F (Flexible) List Price $1.10**

Ask Your Wholesaler

1. LENS made of time tested and proven plastic material.
2. GREATER REFLECTION. Reflects light at a much greater distance than required by law, straight on and at angles.
3. SOCIETY OF AUTOMOTIVE ENGINEERS specifications and GOVERNMENT REQUIREMENTS. This device meets all these and exceeds all photometric specifications.
4. EXTRA PROTECTION. The frame is made of 18 gauge, heavy steel designed so that the double thick side wall extends beyond the face of the lens.
5. SIZE. Lens has 3 inch reflecting surface. Distance between mounting holes $3\frac{15}{16}$ in.

DO-RAY Tested by RECOGNIZED TESTING LABORATORIES PASSING SPECIFICATIONS OF S.A.E. AND I.E.S. MEETING REQUIREMENTS OF I.C.C. SAFER LIGHT SAFER SIGHT

DO-RAY LAMP COMPANY

1458 S. MICHIGAN AVE. · CHICAGO

SAFETY LIGHTING AND REFLECTING EQUIPMENT

DO-RAY ALL RUBBER 3-JEWEL CLEARANCE LAMP

For clearance, marker or parking. Waterproof — dustproof — vibration proof. Lenses interchangeable making either left or right side mounting possible with amber lens in front and red lens in rear to meet legal requirements. All rubber construction. Equipped with No. 63 S. C. bulb. Entire lamp protected by heavy cadmium plated metal guard.

No. 1106-G3, 3 Jewels. List Price.....90c

DO-RAY GIANT LITE STOP LIGHT . . . With Angle Bracket

Ideal for truck bodies extending a considerable distance beyond rear axle. Lamp bolt and bracket hole spacing permit four different mounting positions. Overall diameter $7\frac{5}{16}$ inches. Lamp body and bracket of heavy gauge steel. Five feet of heavy duty wire.

No. 70 Lamp with 32 C. P. bulb, List Price.....$4.00

DO-RAY FLUSH TYPE CLEARANCE LAMP

Overall diameter $4\frac{1}{16}$ inches. Body diameter 3 inches. Depth of body from flange $1\frac{1}{2}$ inches. Heavy gauge steel body — chrome plated brass face plate. 3 C. P., 6-8 volt bulb. 3 inch semaphore lens furnished in red, green, amber or white.

No. 1248 Lamp complete with bulb and wire. List Price.....$1.10

(CONTINUED FROM PAGE 62)

pear in the entire program for all the procedures taught should be thoroughly checked and approved before release. These same conditions should cover both the releases of the preliminary instructors and working instructors.

The procedure for advance courses should take the form of periodic bulletins and letters, and the distribution of selected technical journals and books for off-time reading. Both supervisory and instructor forces should receive copies.

The bulletins and letters may contain a variety of information. A new method to avoid or postpone certain failures in the equipment, or a new tool may be acquired that needs a special technique for its use. New and improved ideas are continuously being advanced through technical papers and books. All this information should be in the hands of an up-to-the-minute organization.

If emergency changes in procedure are necessary, and a large instructor group is involved, photographs of the various steps in the change in procedure, sent immediately to the group, will bring quick and accurate results. A few slides at the conclusion of the paper demonstrate the possibilities of such emergency measures.

On a few occasions, when important equipment changes or additions have required special technique in the organization, we have not only distributed free text books on the subject to the supervisory and instructor personnel, but have paid the tuition of individuals at technical schools.

END

(Please resume your reading on p. 22)

QUIZ ANSWERS

(See page 18)

1. c. 60-65 per cent and if you don't think a grade of 60 per cent is something, just draw a rectangle 10 inches long and 6 inches high. Then draw a diagonal between opposite corners. You'll then have an idea what a 60 per cent grade is like.

2. b. This trucker is putting a fleet of horse-drawn wagons on downtown Chicago streets and may do the same in New York. Traffic delays plus gas shortage are given as twin reasons.

3. c. 3000, according to a recent survey made by the British government. This is in addition to some 2500 laid up for repairs. The U. S. already has plans for sending 10,000 more trucks to the Burma Road to supplement those already there.

4. c. This is the plan announced August 30, facilitating the production of heavy trucks, medium trucks, and truck trailers. This new order puts motor trucks on the same preference basis as waterways and railroad freight cars.

5. a. Records show that 250,000 trucks passed over the Super-Highway during the first year, as compared with 2,235,000 passenger cars and 20,000 buses. Toll rates for trucks run from $1.50 (one-way) for vehicles under 7000 lbs. to $10 for trucks with full trailers, with discounts for large users.

6. b. Interstate Commerce Commission. Don't confuse him with Ted V. Rodgers, who is president of the American Trucking Associations.

7. a. "This Truck Hauls Defense Materials" . . . and the truck operators have a right to proudly proclaim the part they are playing in helping national defense. It is estimated that of all the 4,500,000 trucks on the nation's highways today, close to one-fouth are enagged in hauling defense goods.

8. b. Emergency officials of the government have estimated that in the first six months of the year nearly 22 per cent of all production in motor plants was for military purposes, and 14 per cent additional was for civilian projects specifically connected with defense.

9. d. It is the last three months of the year, because the first onset of cold weather brings out the battery failures, and hence the sales. This time factor is important, inasmuch as quotas for automotive products set by OPM's Limitation Order L-4 are based on production during the first half of 1941. (The battery industry has made a petition that the quota be based on the last half of 1940.)

10. a. Liberia is on the west coast of Africa and was established in 1820 as a homeland for liberated slaves. Extensive rubber plantations were established there in 1926 by Firestone Tire & Rubber Co.

END

(Please resume your reading on p. 20)

CLAW GRIP

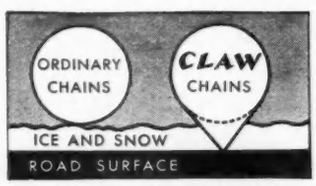
THEY'LL HOLD the ROAD with CLAW TRUCK CHAINS

Only *CLAW* chains have the knife-edge that cuts into ice and snow for positive traction and maximum skid control.

Regardless of road conditions . . . ice, snow or mud . . . trucks equipped with heavy duty ***CLAW Truck Chains*** hold the road and get through on schedule.

CLAW Truck Chains are built for all-weather performance. First, there's the patented ***CLAW***ing edge that actually bites into snow and ice . . . provides positive, non-slipping traction. Then, there's 20% more metal in every cross link (see diagram at right) adding extra wear and mileage. And because every ***CLAW*** link is built of ***CLAW***-Alloy steel, the toughest chain metal known, ***CLAW*** Truck Chains can take the terrific abuse of heavy duty trucking and give maximum safety and mileage at low chain cost.

CLAWS are easy to put on too. The improved Blue Boy fastener snaps on in a jiffy. Special Indented Rim Chains eliminate play and excessive breakage between cross and rim chains. Your trucks will hold the road and get through if you use ***CLAW*** Truck Chains. Write for illustrated literature.



20% MORE CLAW-ALLOY STEEL IN THESE KNIFE EDGES . . . Unlike ordinary round links, ***CLAW*** links have a protruding "V" of steel that bites deep into ice and snow. There's actually 20% more metal in every ***CLAW*** cross link for safer, longer mileage. They can't slip because they ***CLAW***.

COLUMBUS-McKINNON *Chain* CORPORATION

General Offices: TONAWANDA, N. Y.

PLANTS AT ST. CATHARINES, ONT., CAN. AND VEREENIGING, SO. AFRICA

FIFTH WHEEL LOCATION

(CONTINUED FROM PAGE 23)

trailer builder is consulted, he will probably recommend a location 5 in. to 6 in. ahead of the rear axle. His recommendation is based on the premise that builders of small trucks generally supply a nine-foot body as standard on a four-wheel truck with 60 in. C.A. dimension. If evenly loaded, the load center on such a truck would lie 6 in. ahead of the rear axle. Therefore, a king pin set at the same location on the same size of tractor will conform to truck loading recommendations. Now we have two sets of recommendations—one specifying a king pin location of 13 to 14 in. and the other five to six in. ahead of the rear axle. What is the next move?

Let's see what the S.A.E. has to say. There is no official standard but the Society's recommended practice calls for king pin location three to eight in. ahead of the rear axle, depending on the tractor wheelbase—obviously a compromise between the two figures already obtained. Where to now?

As is usual in all such cases, the operator turns to past experience for his answer. He has already selected the size of body necessary to carry his load. The remaining problems involve the structural strength, maneuverability, steering ease, grade ability and safe stopping ability of the train. Now, we have finally arrived at the question of safety, and the relationship between load distribution and safe operation.

Maneuverability is of primary importance. It is at once evident that with the fifth wheel located farther forward on the chassis, for a given movement of the front wheels of the tractor, the semi-trailer will respond more readily. Is this more desirable? Is it safer?

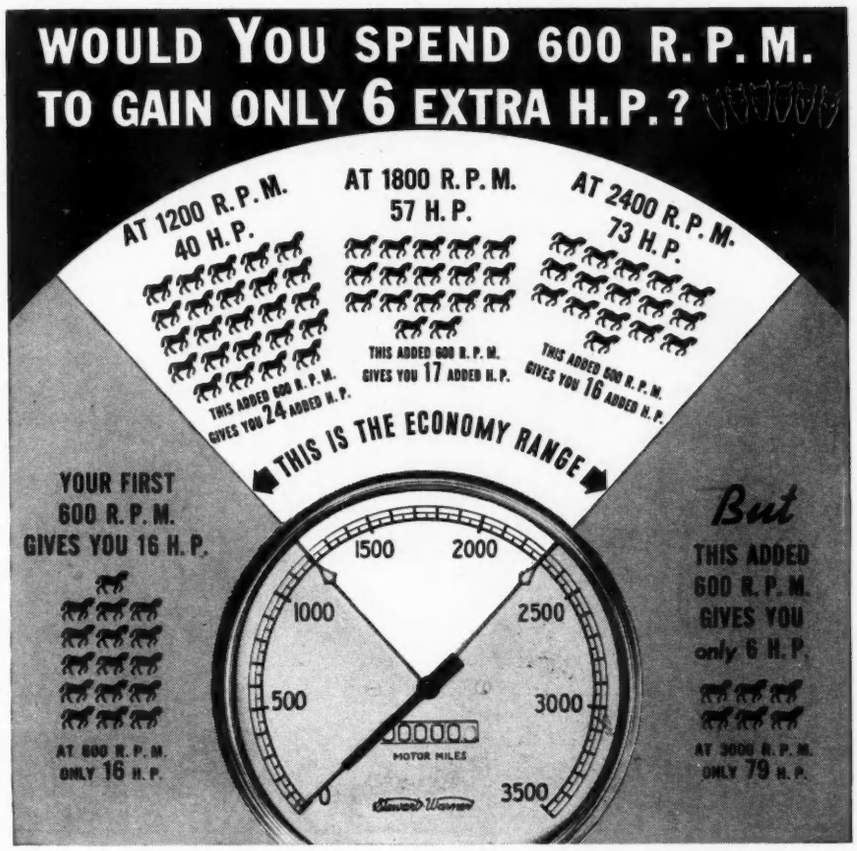
When going around a curve, the momentum of the trailer has a tendency to push the rear end of the tractor off the road. If rain, snow or ice are present on the road surface, the effect of momentum is even greater. A forward location of the fifth wheel adds to the resistance of the tractor front end and minimizes this danger. In traversing hilly country, the set-ahead fifth wheel is of advantage, when going up-grade. The load center is naturally transferred toward the rear of the tractor in such cases, often resulting in a dangerous loss of steering control, particularly when going over bumps in the road. Yet a number of operators and drivers believe that, even though these things are true, the trailer responds too quickly when backing or turning corners. They believe that the increased safety when rounding curves or climbing hills on the highway is offset by the decreased safety when backing or turning into narrow streets.

Other objections to the forward location of fifth wheels voiced by some operators are:

1. Interference between rear of tractor frame and trailer or landing gear.
2. Interference with cab when jackknifing.
3. Tractor frame damage—buckling or breaking.
4. Hard steering.

Interference with trailer frame drop or landing gear is liable to result

(TURN TO PAGE 68, PLEASE)


WOULD YOU SPEND 600 R. P. M. TO GAIN ONLY 6 EXTRA H. P.?
AT 1200 R. P. M. 40 H. P.
THIS ADDED 600 R. P. M. GIVES YOU 24 ADDED H. P.
AT 1800 R. P. M. 57 H. P.
THIS ADDED 600 R. P. M. GIVES YOU 17 ADDED H. P.
AT 2400 R. P. M. 73 H. P.
THIS ADDED 600 R. P. M. GIVES YOU 16 ADDED H. P.
THIS IS THE ECONOMY RANGE
YOUR FIRST 600 R. P. M. GIVES YOU 16 H. P.
AT 600 R. P. M. ONLY 16 H. P.
But THIS ADDED 600 R. P. M. GIVES YOU only 6 H. P.
AT 3600 R. P. M. ONLY 79 H. P.
0
500
1000
1500
2000
2500
3000
3500
MOTOR MILES
Stewart Warner

Only WITH THIS AMAZING INSTRUMENT CAN YOUR DRIVERS *Know* THE ECONOMY RANGE!

EVERY TRUCK has an "economy range"—a range of motor speed *within which it delivers economical horsepower,* and above or below which it operates extravagantly. The truck for which this chart is accurate, for example, delivers only 6 added horsepower for the last 600 R.P.M., when running at 3000. The fuel required for the extra motor speed is out of all proportion to the power output!

There's only one instrument which tells your drivers when they're operating within the economy range—and that's the amazing Stewart-Warner Motor Mile Tachometer. Users report that these instruments *save up to 25% in gas and oil—and reduce repair bills by as much as 25%*—because actual motor miles are recorded as the basis for service, rather than road miles! Mail the coupon NOW!

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We operate _____ trucks. Please tell us how Stewart-Warner Motor Mile Tachometers can help us cut costs.

*Name*_____

*Address*_____

*City*_____ *State*_____

*Firm Name*_____

(CONTINUED FROM PAGE 67)

from locating fifth wheels a full inch ahead of the axle for each 10 in. of wheelbase, in some cases. Interference with the cab, especially a sleeper cab, or gas tank, spare tire, etc., located in back of the cab, may also result, particularly in tractors of less than 72 in. C.A. Such interference can easily be calculated, and should, of course, be avoided.

Are the third and fourth—steering and frame—actual objections, based on previous experience, or merely fears for what may happen? Where front axle loads do not exceed axle capacities, no trouble will be experienced with hard steering. Fear of frame damage is largely unjustified.

Just as a practical example, may I give you the results of experiments in fifth wheel location, in our own fleet? One of our operations is that of hauling poles out of a central pole yard direct to jobs or to auxiliary pole yards, within a radius of 125 miles. The train consists of a truck tractor equipped with a conventional fifth wheel, and a semi-trailer with an adjustable tubular reach, on the forward end of which the front bolster and upper fifth wheel are mounted. The poles carried vary from 30 to 70 ft. in length, the average being 40 ft. The train is therefore abnormally long. In fact, it exceeds the legal limit, from which we are exempt. A great many operators purchase too short a tractor, under the mistaken idea that a longer wheelbase would increase the overall length of the train. We did exactly the same thing. I would like to play the rôle of the hero in this story—the smart guy who picked out the right unit in one glance, and lived happily ever after. Unfortunately, however, I feel constrained to tell you some measure of the truth. We learned about load distribution the hard way. The first tractor was purchased for this work five years ago. It's wheelbase was 136 in. with a 60 in. C.A. dimension. I do not now recall the exact location of the fifth-wheel, but it was about four or five in. ahead of the rear axle.

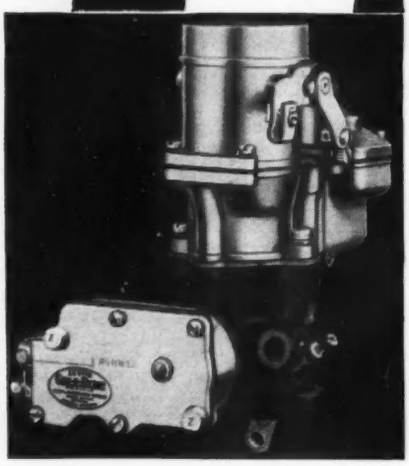
We soon found out that this was not an ideal unit. Fortunately, we needed a dump truck about that time, so we converted the tractor to a dumper and purchased a new tractor. The tractor now used has 153 in. wheelbase and 84 in. C.A. dimension—longer than most tractors but not too long for the type of load carried. For the sake of experiment, we again located the fifth wheel five in. ahead of the rear axle and asked the driver to give us his opinion of the handling of the unit.

Naturally, it was an improvement over the previous tractor. With the same length reach, the overhang of the load on the trailer was less, and the driver thought it handled pretty well. Then we weighed the job. Our gross train weight varied from day to day, of course, but usually ran between 40,000 and 50,000 lbs. Weights indicated a load distribution of roughly 16—41—43 on the three axles. They also indicated that we were carrying practically none of the payload on the front axle at all. Next, we set the fifth wheel a full 15 in. ahead—practically one in. in 10 for a 153 in. wheel base tractor. Our load distribution then became 18—38—44. The front axle was carrying a little more than 4 per cent

(TURN TO PAGE 70, PLEASE)

Double your guard over costs, with—

ZENITH GOV·U·RETOR

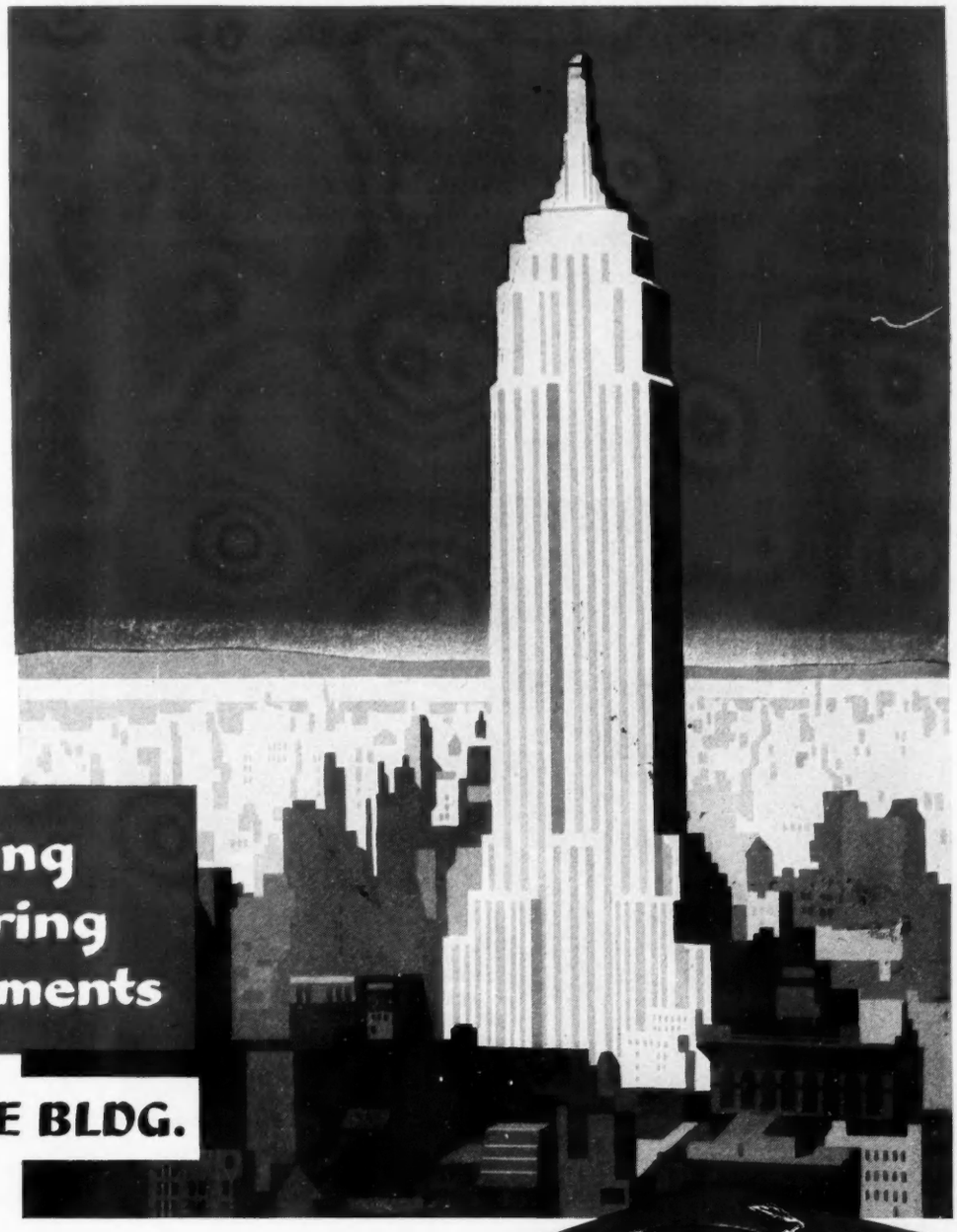


GUARDING your fuel economy is the sturdy long-lived precision construction of the Zenith Carburetor—long recognized by truck and tractor engineers.

Guarding your engines, vehicles and drivers against the hazard of dangerous, destructive road speeds is the Zenith built-in governor—the element that makes the whole unit a Zenith Gov-u-retor.

It's a single, thoroughly engineered unit—"better in every way than separate unmatched units," say enthusiastic operators. Made in both updraft and downdraft types. Checks cheating by throttle manipulation. Assures driving at most efficient, economical operating speeds. Prolongs engine life. Conserves fuel. For full details—

Write! ZENITH CARBURETOR DIVISION
BENDIX AVIATION CORPORATION
696 HART AVENUE DETROIT, MICHIGAN



Outstanding Engineering Achievements

EMPIRE STATE BLDG.

and

SEALED POWER

Individually Engineered

PISTON RING SETS

TOWERING high above the skyscrapers of the world is the Empire State Building, an outstanding example of modern engineering. And performing far above average piston rings are Sealed Power Individually Engineered Ring Sets, the fine products of brilliant engineers.

Yes, the engineering of a piston ring is just as important as the engineering of a skyscraper, a bridge or a canal, say Sealed Power Engineers. Thus, into every ring go their vast engineering knowledge, their experience acquired through 30 years of continuous contact with automotive engineers plus their ambition for a perfect product.

You benefit by these extraordinarily high engineering standards, and by all this experience. For better engineered rings mean a better performing engine . . . and big savings for fleets. Install a Sealed Power Engineered Ring Set in your next five or six jobs. Results will convince you that there is a big difference in piston rings.

For all popular makes of cars and trucks

SEALED POWER CORPORATION
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Piston Rings, Pistons, Pins, Valves, Sleeves, Spindle Bolts, Bushings, Water Pumps, Tie Rods and Front End Parts

(CONTINUED FROM PAGE 68)
of the payload. The total front axle load was 7800 lb., tire equipment 9.75/20.

Here is the driver's report, as nearly as I can recall it: "Well, I hate to admit it, but she's a new truck. She steers better—when I go over a bump in the road, she doesn't shimmy like she used to. When I put the brakes on, she squats right down, and she didn't do that before. It's got more power, too. For the first time today, I rolled her all the way from Saratoga to Glens Falls in high. Even the helper noticed it. Said she rode better than she ever has."

Then we threw away the slide rule, the formula book, and all the gadgets. We had the final answer. It was a safer vehicle—better load distribution had made it steer better, stop better, ride better and roll more freely.

Just one more practical example, involving a more conventional type of tractor and semi-trailer. The pole semi-trailer, just mentioned, had no landing gear, or forward frame, to cause interference. This second unit consists of a 144 in. wheelbase tractor with 72 in. C.A. dimension. The semi-trailer is a stake job, handling the transportation of line material between our various storerooms within a radius of 75 miles. Again, it was a case of coupling a new tractor to an old semi. Again we located the fifth wheel four or five in. ahead of the axle. Gross train weight varied from 25,000 lb. to 30,000 lb. and the load distribution was 15—50—35. Again practically none of the payload was carried on the front axle. Due to interference with landing gear, we were unable to move the fifth wheel more than 12 in. ahead of the rear axle—not quite one in. in 10 for 144 in. wheelbase. But our load distribution then became 20—38—42. We had transferred about 5½ per cent of the payload to the front axle, whose total load is now 5100 lb. on 8.25/20 tire equipment.

This unit backs into loading docks at every stop. The driver said that the first day out he had a little more trouble in backing, due to the greater sensitivity of the trailer. After he became used to it, however, he liked it better—it was less work, he said, and the trailer responded better to front wheel movement. In other respects, this driver's story was much the same as the previous one—better control, better braking, a more free rolling train.

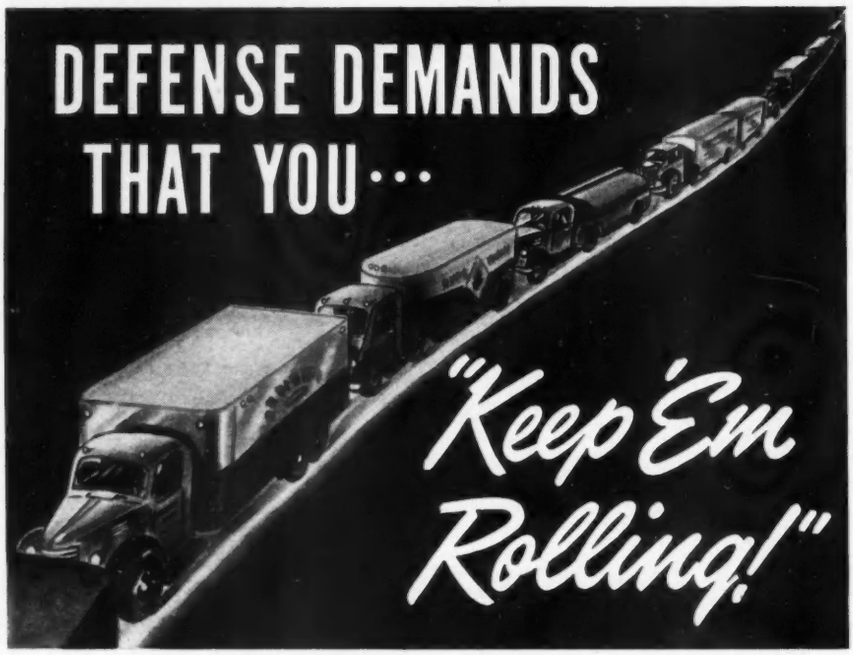
Another advantage we have found in setting fifth wheels farther forward is this. If the trailer brakes become inoperative for any reason—freeze up, line hose broken or disconnected (these things will happen occasionally even with the best of attention) and the fifth wheel is directly over, or just slightly ahead of the axle, when the tractor brakes are applied on slippery pavements the trailer will jack-knife. With the fifth wheel set farther ahead, this tendency is minimized—an important safety advantage.

END

(Please resume your reading on p. 24)

War On Auto Accidents

Plans are being made by the International Association of Police Chiefs to push legislation designed to reduce traffic accidents. An expected 1940 traffic accident record of 40,000 deaths and 1,400,000 injuries (18 per cent more than 1940) is responsible for this organized fight against accidents.



DEFENSE demands that you keep your fleet in the pink of condition so every unit can roll every possible hour of the day.

For replacement fittings and fuel lines needed to keep your fleet a' rolling insist on Weatherhead —original equipment on most trucks and buses.

Your jobber carries both—complete assortments of Weatherhead fittings; and Weatherhead fuel lines in coils or ready-to-install lines with fittings attached.

THE WEATHERHEAD CO.
300 East 131st Street • Cleveland, Ohio

Sludging Problem"

SERVICE FOR YOUR FLEET!

1 **YOUR PROBLEM IS ANSWERED!** Nothing is taken for granted, no step is overlooked. Socony-Vacuum's fleet engineer analyzes your fleet by makes and models, for type of service, loads carried, operating temperatures, engine condition, maintenance methods. He then helps your men carry out money-saving operating and maintenance improvements.

2 **LUBRICANTS TO FIT!** Socony-Vacuum's engineers are not guided by guesswork. They base recommendations on scientific tests—select products for *your* equipment from Delvac "500 Series" Oils, Sovac Truck-Bus Oils, Mobilubes, and Mobilgreases.

3 **75 YEARS' EXPERIENCE!** And every Socony-Vacuum fleet engineer has been trained to apply this experience—greatest in the oil business—to help *you* hold maintenance and operating costs to a minimum.

4 **NATION-WIDE SERVICE!** Across the U. S. A., you will find our fleet engineers available to recommend lubricants to meet *all* conditions on your routes. SOCONY-VACUUM OIL CO., INC., and Affiliates: Magnolia Petroleum Co., General Petroleum Corporation of California.

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26 Broadway, New York City

YOU BENEFIT FROM **75 YEARS'** LUBRICATION EXPERIENCE **1866-1941**

Fleet Engineer

FACTS FROM EXAMS

(CONTINUED FROM PAGE 24)

with him two forms, an authorization form and a physical examination blank. The authorization form, signed by the agent or manager, gives written authorization to the doctor for the examination, and this form is also used in authorizing treatment for injuries. A section of the physical examination blank is signed by the employe, or applicant, in the presence of the manager and signed again by him after his physical examination in the presence of the doctor as a means of making certain that the man who is examined is the same as the one sent to the doctor by the agent or manager. Physical examination blanks, when completed, are forwarded with the authorization slip to the Chief Surgeon's office, and final authority with respect to the man's qualification or disqualification for employment must come from the Chief Surgeon's office.

Our companies are not informed with regard to the reasons for a man's qualification for employment and we endeavor in so far as possible to preserve a confidential relationship between the examining surgeon and the workman. So far as the company is concerned, it is only necessary for the management to know whether or not a man is physically fit for the job he is doing or the one he is applying for. If there are any defects which can be corrected, the workman is so advised and requested to visit his family physician for the necessary treatment. In some cases men are disqualified provisionally and advised that if they will have their disqualifying defects corrected and apply for re-examination, they will be reconsidered for employment.

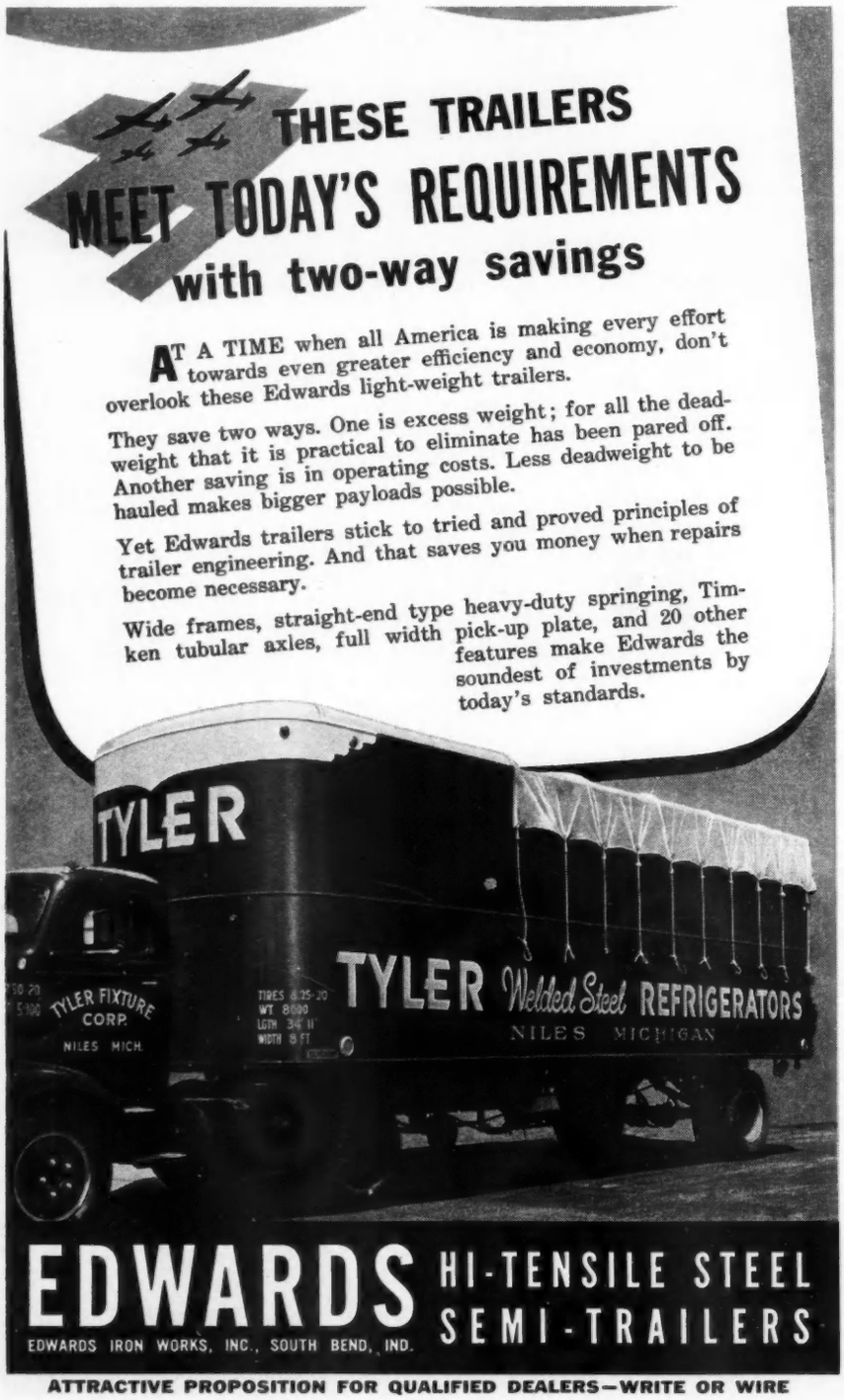
Getting down to actual figures, we have selected the 2½-year period from January, 1939, to July, 1941, as being fairly representative of the type of results attained through a physical examination program such as we have described. We shall consider first the new men or applicants for employment, and it is only fair to state that we tend to be more strict in the enforcement of our physical standard requirements in connection with new men than in the cases of men who are currently employed by our companies and who are undergoing re-examination. In the 30-month period indicated, we examined 2943 applicants, of whom 467 were found to be physically unfit for service with our companies. Of these 467 disqualified men, 167 were found to have defective vision of a serious nature. However, 19 of these men with visual defects succeeded in having them corrected and were later qualified for work.

One hundred forty-four men were turned down because of hernia. These men were informed that they must have these defects surgically repaired by their own physicians before they could be reconsidered for employment. In this connection we might add that we do not allow a man who has a hernia to work even though he may wear a truss, because the risk involved is too great.

Sixty-two men were rejected because they were above the age limit which we consider a maximum for maintaining a desirable and lasting physical standard of employment.

In 43 cases men were rejected be-

(TURN TO PAGE 76, PLEASE)


THESE TRAILERS
MEET TODAY'S REQUIREMENTS
with two-way savings
AT A TIME when all America is making every effort towards even greater efficiency and economy, don't overlook these Edwards light-weight trailers.
They save two ways. One is excess weight; for all the deadweight that it is practical to eliminate has been pared off. Another saving is in operating costs. Less deadweight to be hauled makes bigger payloads possible.
Yet Edwards trailers stick to tried and proved principles of trailer engineering. And that saves you money when repairs become necessary.
Wide frames, straight-end type heavy-duty springing, Timken tubular axles, full width pick-up plate, and 20 other features make Edwards the soundest of investments by today's standards.
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TYLER FIXTURE CORP.
NILES MICH.
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EDWARDS HI-TENSILE STEEL SEMI-TRAILERS
EDWARDS IRON WORKS, INC., SOUTH BEND, IND.
ATTRACTIVE PROPOSITION FOR QUALIFIED DEALERS—WRITE OR WIRE

YOUR WAGNER JOBBER can supply all hydraulic brake parts and fluid for any truck, tractor, bus or car

It's economical, convenient and saves time to concentrate your purchases of hydraulic brake service requirements with a Wagner jobber. There is one near you, and it will pay you to get everything you need from this one source.

You'll find your Wagner jobber can supply complete, new, factory-built and factory-tested Master and Wheel Cylinders, as well as a full line of individual cylinder parts, hoses, fittings, etc.

This same source can also furnish you with genuine Wagner Lockheed Hydraulic Brake Fluid No. 21. It is an all-weather, year-round fluid. One type meets all needs.

Ask your Wagner jobber for details—or write us.

H41-258

Automotive Parts Division **Wagner Electric Corporation** 6400 Plymouth Ave. St. Louis, Mo., U. S. A.

(CONTINUED FROM PAGE 74)
cause of cardiovascular renal diseases; 14 had serious physical deformities; eight were victims of pulmonary tuberculosis; eight were suffering from glycosuria; six had venereal diseases; four had defective hearing; four others were rejected for miscellaneous major defects.

Among the 2476 applicants who were accepted for employment, 434 were found to be suffering from minor physical defects, some of which, if not corrected, could readily become disqualifying defects. At the head of this list were 295 cases of carious teeth, of which 32 cases were definitely corrected by dentists, to our knowledge. Forty men were suffering from minor visual defects, all of whom visited their oculists for the correction of these conditions. Twenty men were suffering from abnormal blood pressure of which 13 cases were fully corrected. Eleven men were overweight and advised to go on a diet, while two placed themselves definitely under a doctor's care. Out of 47 cases of diseased tonsils discovered, 10 men had them removed. Nine cases of albumin and one of glycosuria were corrected and out of 11 others found to be suffering with various minor defects, two have been corrected.

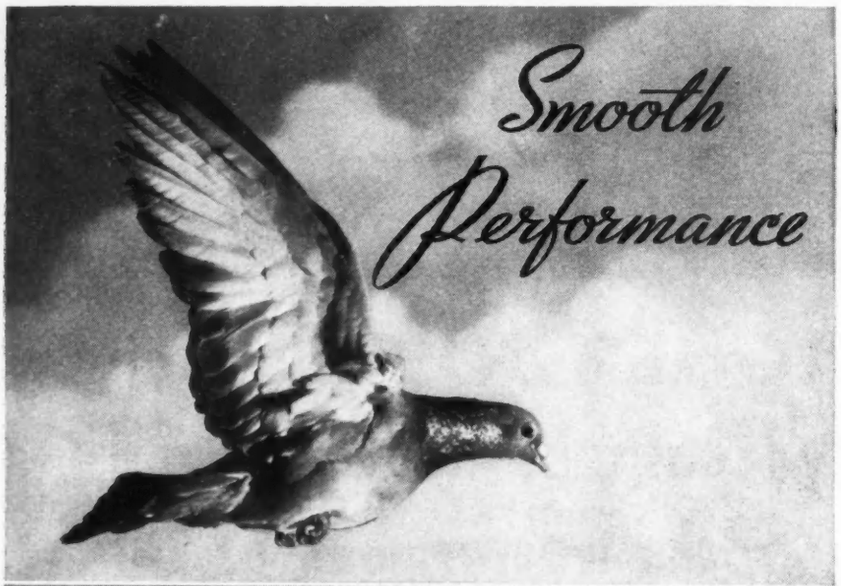
Considering the re-examinations of the employes in service, we found that we re-examined 3069 men, and the following conditions were found: 343 cases of carious teeth were seen and our office has received 70 letters from dentists indicating correction of these defects. Many other cases were undoubtedly given the necessary attention; 127 men whose vision had been normal with or without glasses at their last examination were found to have visual defects which needed correction. It is singular that only two drivers out of this group of men were unable to have their vision corrected with the proper lenses to permit their continuing to work as drivers. At the same time, these figures show the extent to which serious visual defects may arise in a normal, healthy group of men from one year to another.

Sixty-eight cases of abnormal blood pressure were found, and of these, 29 men placed themselves immediately under their doctor's care as evidenced by letters from their physicians. Fifty-eight men were found to be overweight and at least eight consulted their physicians regarding treatment. Eighteen new herniae were discovered and 16 of these were repaired at the worker's own expense. Three serious cardiac defects were found and one of these had progressed to such an extent that the man was unable to continue working.

Of 16 cases of albumin, six were corrected; nine cases of glycosuria were discovered and all were corrected; 37 men were found to have diseased tonsils and 12 of these had them removed. One man, whose hearing made it necessary for him to quit driving, was re-employed as a helper. Five men were found to have pulmonary tuberculosis, four of whom continued working under treatment, and one with a collapsed lung was switched to office work. One man found to have encephalitis was given a job in the office. Of 15 other miscellaneous defects that were discovered, eight men corrected them.

END

(Please resume your reading on p. 25)



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ROLLER BEARINGS
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The amazingly smooth action of Link-Belt Roller Bearings assures miles and miles of extra wear. The exclusive roller and raceway design provides for constant perfect alignment and greater load capacity. From every angle, you will find these bearings give you more for your money and deliver the kind of service you want. Your Jobber is ready to supply you with Link-Belt Bearings—see him today!

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Made by the makers of the famous Silverstreak Silent Timing Chain!

AC OIL FILTERS CHECK THIS—
and help cut overhaul expense

You know the vicious cycle,—plugged slots in oil control rings . . . then loss of compression, waste of oil and gas, accelerated formation of carbon . . . and, finally, overhaul.

You can retard the progress of that cycle — substantially — if you equip with AC or Argo Oil Filters. And you'll save the cost of the filters, several times over.

AC and Argo filters keep engine oil clean because they trap all the dust, dirt, and sludge. And they keep doing this, every mile, as long as there is room for dirt inside the filter case. (When the case becomes filled, just clean it out and slip in a new filter element, and the filter is on the job again.)

AC or Argo filters are easily and quickly installed, even on engines not filter equipped. Element renewal takes only a few minutes, and requires no dismounting or disconnection of fittings.

Both filters are made in several sizes, and for all engines. So, why be without the money-saving advantages of AC or Argo Oil Filters?

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OIL
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Your AC Supplier can Furnish all Commercial Sizes

AC OIL FILTERS *are standard or optional equipment on*—BUICK, OLDSMOBILE*, and PONTIAC* Motor Cars • GMC Trucks • GREYHOUND and FLXIBLE Buses • ALLIS-CHALMERS, EAGLE, GRAVELY, and READY POWER Tractors • ATLAS IMPERIAL, and GM DIESELS • CONTINENTAL and GRAY MARINE MOTORS • MARION SHOVELS • KOEHRING ROAD MACHINERY • BROWN and SHARPE MACHINERY,— these are some of the vehicles, power plants, and machines on which AC Oil Filters are used for equipment. *Optional

MONEY CAN'T BUY BETTER FILTER PROTECTION THAN AC

SCATTERED FLEET

(CONTINUED FROM PAGE 25)

the pounds-per-square-inch of brake area between makes and between models of the same make.

Inaccessibility of parts should also be given careful consideration, particularly those which will require service on a periodic basis. Committees of various technical societies throughout the country have been attempting for some time to get the manufacturers to standardize on the location of certain of these items with the thought that they would be uniform, more accessible and cheaper to maintain. This is particularly important if the scattered fleet consists of more than one make of vehicle.

There are four factors which should be given careful consideration in order to control maintenance expense. These are: fuel economy; oil economy; tires; repairs.

Fuel costs represent a large percentage of the operating and maintenance costs of motor vehicles. Errol Gay of the Ethyl Gasoline Corp. has stated that the maintenance procedure should be governed by the possible amount of money which can be saved by increasing the fuel economy. In centralized repair shops certain routines can be established for motor tune-up, etc., which will provide better fuel economy. This is not possible in connection with a scattered fleet. The best method to obtain fuel economy in this case is to be sure that the grade of fuel purchased at various locations is approximately the same so that the carburetors do not require changes for maximum economy. A good driver who has been trained in economical driving methods is essential for satisfactory fuel economy in any fleet, but this is particularly true in the scattered fleet spread over a large area. Good fuel economy is essential to long engine life and, consequently, lower maintenance costs. Since it affects both the operation and maintenance it is of greater importance.

Many operators govern the engine maintenance by the oil consumption results. This appears to be a good practice and, therefore, oil economy is quite important. We have found it advisable to use a good brand of oil in all locations. We have also found that it is undesirable to use different makes of oil as make-up oil. It is important to maintain the oil in the crankcase in good condition. This should be done by replacing the filter cartridges as required and by changing oil on some established periodic basis.

It is difficult in a scattered operation to keep the tire pressures regulated. It is necessary to depend on the drivers, and this often requires more supervision than it should. Many operators feel that it is particularly essential to maintain tire records on a scattered fleet operation. My experience indicates that it is difficult to keep the records accurate in this type of operation and we have adopted the policy of returning all junk tires to headquarters as a means of being sure that maximum mileage is obtained.

The repairs on most modern vehicles should consist mostly of unit replacement on an exchange basis with the dealer. It therefore becomes a problem of determining the probable maximum life of these units and

(TURN TO PAGE 82, PLEASE)

Get them on the road Faster

...WITH Snap-on Wrenches

Now is the time to check up on your tool kit . . . to make sure it's "in shape" with plenty of Snap-ons for the big job ahead. For the greatest volume of repair business in automotive history is rolling in . . . and "tools will tell" as never before.

You'll find Snap-ons will *see you through.* They're built to perform when the pressure's on. For instance: There's the positive, time-saving way a Snap-on wrench "snugs-on" to a nut, without slipping or chewing . . . the power you feel in a Snap-on's bulldog grip, in its safe, sure leverage . . . the nut-turning speed that comes from correctly shaped wrench handles for every job . . . the deft way a Snap-on handles . . . the beautiful balance and finish that tell you, even in the dark, that here's a master tool for master workmen!

Get set for real service . . . with Snap-on tools! See your Snap-on salesman, or write . . .

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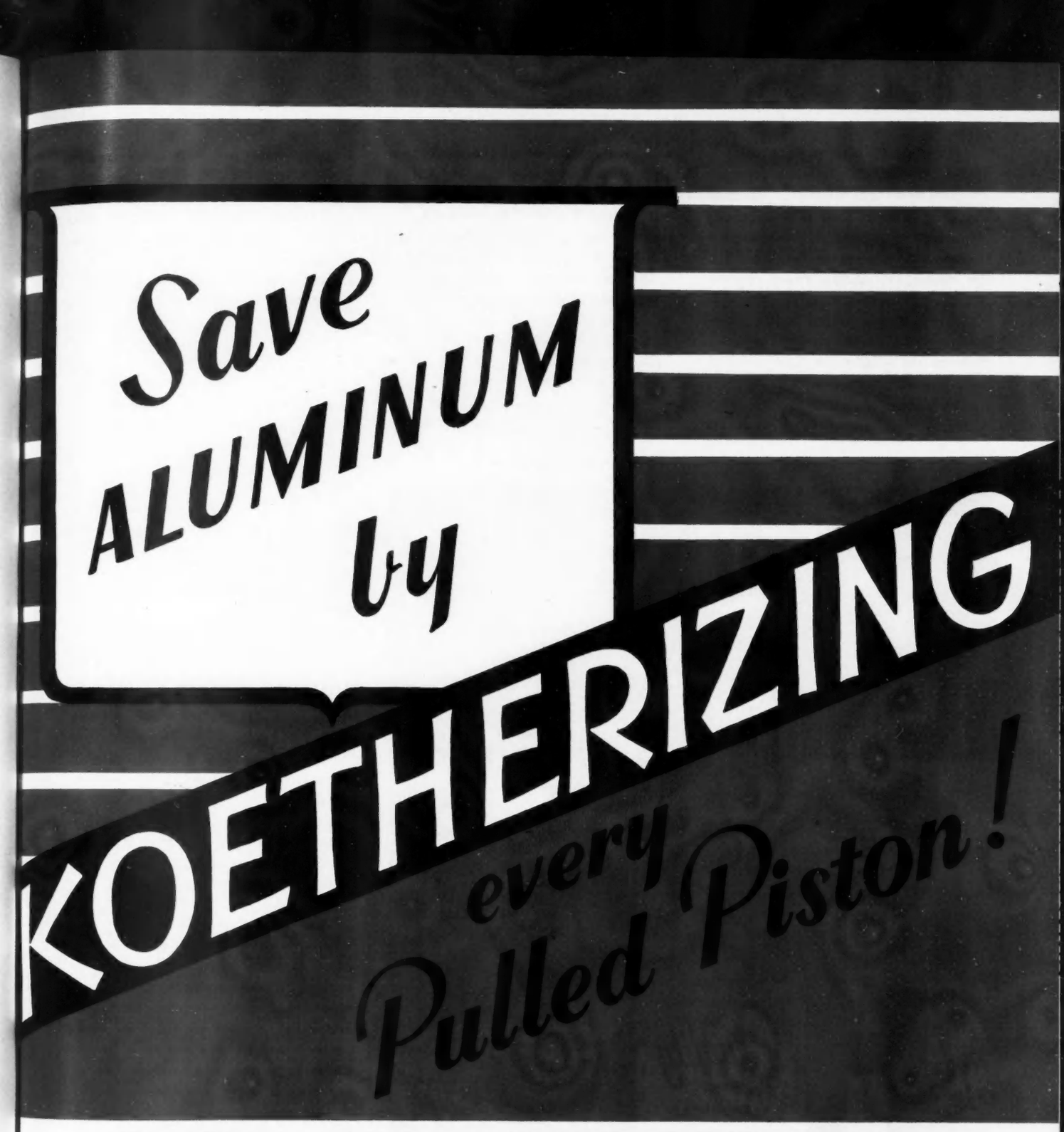
The Choice of Better Mechanics



FACTS ABOUT KOETHERIZING

There is only one genuine Koetherizing! **It is a *patented* process. There is no such thing as a "just the same" . . . no such thing as a "just as good."**

WHAT KOETHERIZING DOES:

Koetherizing expands pistons accurately to within .001 of an inch.

Koetherizing resizes the piston permanently. *Koetherized pistons will not collapse again.*

Koetherizing makes all aluminum pistons "cam ground pistons."

Koetherizing is equally effective on either cast iron or aluminum pistons.

WHAT KOETHERIZING DOES NOT DO:

Koetherizing does *not* result in brittleness, or weaken the piston in any way.

Koetherizing does *not* create piston-boss distortion.

Koetherizing does *not* disturb piston-pin fit.

Koetherizing does *not* add weight to the piston.

Koetherizing does *not* "fall down" under engine heat.

KOPPERS COMPANY
AMERICAN HAMMERED PISTON RING DIV. • BALTIMORE, MD.

(CONTINUED FROM PAGE 80)
scheduling the maintenance program so that these are replaced just previous to failure. This is particularly important in a scattered fleet as it is necessary to depend on the driver and the dealer to regulate these repairs. We have been somewhat successful in installing a preventive maintenance program in dealer service stations. Dealers were generally skeptical of such a program as they felt that they would lose some repair work. Here again it was necessary to train the service department of the dealer organizations to make the inspections and then do the work authorized by our Transportation Departments. We pay the dealers for the inspection and feel that the money is well spent.

In locations where there are only one or two vehicles we ask the drivers to make a monthly inspection in which they check about 10 items, such as fan belt, wheel bearings, steering gear, oil condition as indicated by color, etc. We also ask him in filling out this form to advise any repairs which are required. In this way the operating manager knows the condition of all the vehicles all of the time. Naturally, some of the drivers neglect this inspection and consequently, there is a bill for a major overhaul immediately following a report which indicates no repairs are necessary. After a few cases of neglect have been corrected we find the plan works satisfactorily.

In order to maintain an effective control of maintenance of any fleet and particularly of a scattered one, it is necessary to have certain periodic reports. Unless these reports are kept quite simple, too much time is lost in the accounting procedures and the report becomes an historical record rather than one of current operating expense. In the operation of our vehicles we of the transportation department are interested only in gasoline mileage and maintenance expense. Inasmuch as we calculate this on a mileage basis we must have the total miles run during the period of the report. All of the other expenses may be grouped according to the type of vehicle and, consequently, considerable accounting expense can be saved. The report is complete in that it gives the total expense and is quite simple. We feel that these reports should be on a monthly basis and should be in our hands as soon as possible; not later than the 15th of the following month. In areas where accounting procedures prohibit meeting this expectancy, the garage superintendents keep some records of their own so that they know the results in time to make corrections in maintenance procedures in order to eliminate the recurrence of high maintenance cost.

The maintenance of a scattered fleet presents many individual problems. I have attempted to confine my remarks to those which may be applied to any type of fleet. It is my feeling that the most important thing confronting the operator today is to develop in the minds of the vehicle manufacturers the need for better dealer service. The operator is in an excellent position to insist upon this by selecting his equipment from the manufacturer who is interested in the service problem. By continuing efforts along this line I feel that further improvements will be made.

END

(Please resume your reading on p. 26)

Cole-Hersee Company
serves AMERICAN DEFENSE
Quality
ELECTRICAL
AUTOMOTIVE
EQUIPMENT
Cole-Hersee Products
are used by leading car, truck and trailer manufacturers as original equipment.
★ With you, as with us, defense comes first. But we are endeavoring to give our customers the best service possible under these conditions, and ask your cooperation.
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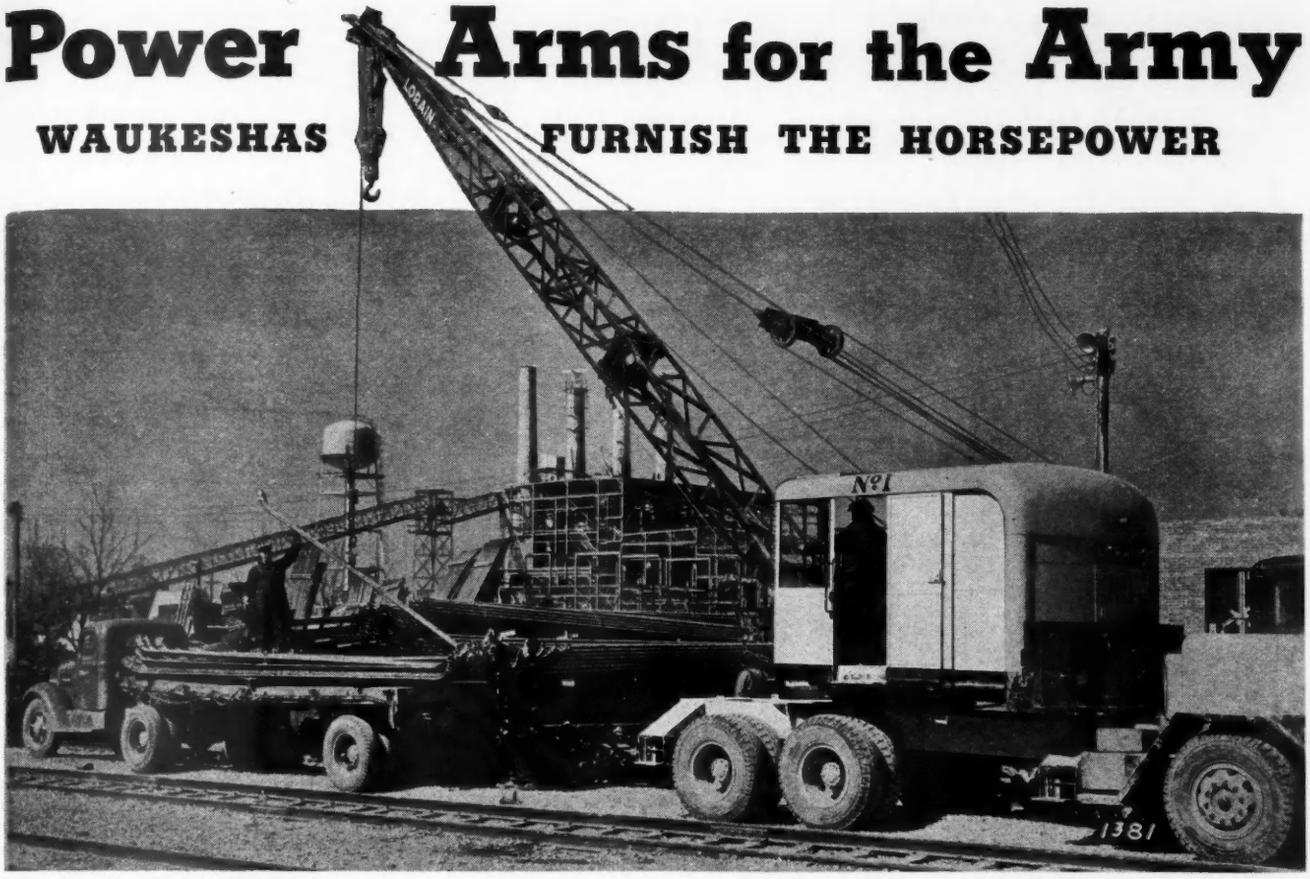
Power Arms for the Army

WAUKESHAS FURNISH THE HORSEPOWER



Photograph courtesy of Thew Shovel Company.

Like huge human arms . . . but infinitely more powerful proportionately, and *untiring* . . . the crane booms move with military precision. And it's Waukesha Engines that put the power in these power arms that are helping to arm the army.

This Lorain Moto-Crane is moving tons of steel for the Army's new Indiana Ordnance Plant at Charlestown, Indiana. The crane turntable is powered by a 65-70 hp. super-six Model MZR Waukesha Engine; the crane carrier by an 80 to 90 hp. Model SRKR Waukesha Engine.

When producing or manufacturing facilities vital to defense are being built or expanded, contractors and their machinery makers can't take time to ponder engine dependability. They must know that dependability is *built-in*, as Waukesha builds in dependability.

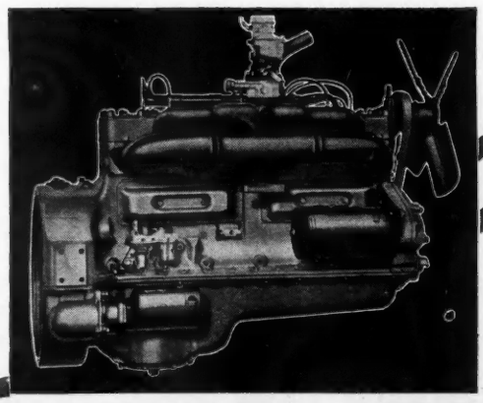
The Waukesha Blue Flame Manifold, for instance, gives quick acceleration, with smoothness of operation. The engine will swing into action *instantly* with no bucking or harshness whatever.

The Waukesha Controlled Turbulence cylinder head provides a higher power and torque output with smooth, progressive combustion—with non-premium gasolines.

These are but two of the many greater-dependability higher-economy longer-life features of Waukesha Gasoline and Oil Engines for Industrial, Stationary and Automotive Power. Sizes from 5 hp. to over 300 hp. *Get Bulletin 1079.*

WAUKESHA MOTOR COMPANY, WAUKESHA, WIS.

NEW YORK TULSA LOS ANGELES



MORE POWER FOR DEFENSE

WAUKESHA ENGINES

FLEETMEN FACE SAFETY

(*Continued from page 22*)

presided at the first exclusive commercial vehicle session which considered the problems of "Commercial Vehicle and Defense." He stated in his opening remarks that "accidents can be looked on as operating errors, and when the causes of the errors are corrected, the accidents are also controlled." He mentioned what are, in his opinion, "the three most important steps in an attack on accidents."

It is the tendency of some safety directors, he thinks, "to get too close to accidents to properly watch their equipment." He has been surprised, he said, to learn how much interest drivers take in an improved, more comfortable truck seat, and he thinks that many accidents have been due primarily to fatigue from poor driving seats.

A second important step in fighting accidents is the more thorough training of shop mechanics, so they will really know what they are doing. For instance, the need of proper lubrication and the balancing of brakes, and proper headlight maintenance.

The third important accident-control factor is the driver himself—and the need of a real training program in proper driving.

Ted V. Rodgers, president of the American Trucking Association, Inc., reviewed some of the present-day problems of fleet operators of the national defense program. He reminded that there are 2,000,000 more motor vehicles on our highways today than we had at the end of 1939, and that this increase was more than the total of all motor vehicles in Germany, and nearly as many as the total in the entire British Empire. Many of these newest highway drivers, he said, were untrained, hence have created increasing highway hazards. Also, some sections of highway have become so congested with new defense traffic that many operators should, where possible, re-route their traffic and re-arrange their schedules. He reminded that in a mechanized army at least one-third of the men must be drivers or mechanics; that the trucking industry is losing many trained workers "who are going into the armed services or defense industries at an alarming rate."

A survey made recently by the Safety Department of the A.T.A. among 97 motor carriers in 30 states indicated that today they are employing 23 per cent more drivers than last year, and that 11 per cent of the drivers of last year had quit their jobs to go into military service or the defense industries. Thus, more than one-third of their present drivers are new, and most of these have not been properly trained. The reported loss of trained mechanics is even more severe. Fifty-seven carriers who last year employed 428 mechanics now have 532, or an increase of more than 24 per cent; 17 per cent of their old mechanics have gone into army service or defense work. Thus, 41 per cent of their mechanics are new and many of them not properly trained.

As constructive measures to help meet this situation, President Rodgers announced that the A.T.A. is sponsoring a national program for the more speedy training of shop mechanics, based on their specializing in only a few shop operations, versus the four-year training period usually required to make an all-round shop mechanic.

"This plan will probably require more men in the shop," said Rodgers, "but it seems the only way to meet our emergency needs."

The A.T.A. program also includes a plan to conduct at different trucking centers over the country, during November and December, a series of schools to train mechanics in the proper maintenance of brakes.

Rodgers, as a member of the national Central Motor Transportation Committee, is hopeful that the motor trucking industry will be able to continue to get all new equipment and repair parts needed for the safety maintenance of all trucking equipment. This hope, he reported, is based on personal assurances made to him by O.P.M. officials; and by the recent more favorable priority ratings granted to the industry. However, Rodgers said it has been his advice to individual truck operators, when they get new equipment, not to trade in the old equipment, but to keep it out "back of the garage" against the time when some of the parts of the

(Turn to Page 86, Please)

Wise trucking operators take no chances with snow and ice...when winter makes roads slippery, on go the chains. But the protection given by good brake linings is needed in any kind of weather. Even emergency stops must be smooth to protect the load from damage, straight line to keep the vehicle in its "lane."

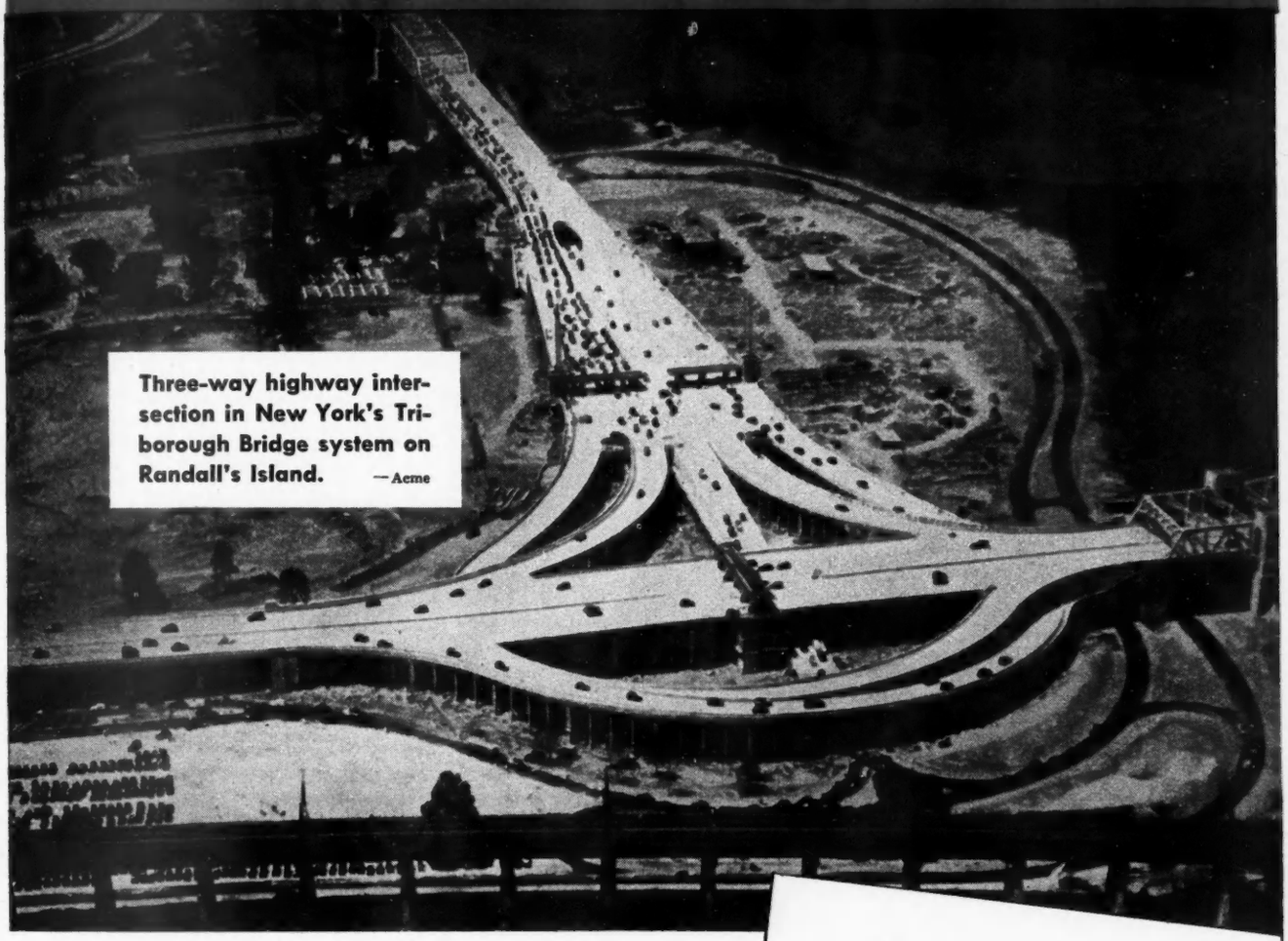
Every month sees more and more trucking operators installing Ferodo Brake Linings. Most popular are Ferodo Sealed Sets for Ford and Chevrolet trucks, Ferodo Truck sets for light and medium vehicles and Ferodo Molded Brake Blocks for heavy vehicles. Don't put it off . . . start equipping now with Ferodo Brake Linings and Blocks.

Ferodo for Road Safety

FERODO
BRAKE LININGS

FERODO AND ASBESTOS, INCORPORATED, NEW BRUNSWICK, N. J.

Where They STOP Safely... or *THEY STOP DRIVING*



Three-way highway intersection in New York's Triborough Bridge system on Randall's Island. —Acme

American Brakeblok Brake Lining Keeps Them Rolling Safely Wherever Wheels Are Turning

Four million vehicles depend today on American Brakeblok Brake Lining for quick stops in pinches and safe stops everywhere. Jobbers and repair shops recommend and install this wear, water and grease-resistant lining with confidence because it is the branded product of an experienced maker . . . a successful pioneer in molded-type linings.

Special Note—American Brakeblok offers three types of heavy-duty linings and a free Brake Lining Advisory Service for heavy-duty operators. Write today.

American Brakeblok

BRAKE LINING

AMERICAN BRAKEBLOK

1 NAME PRICE QUALITY*

*A Top Quality Lining for Every Application

Master stocks in 38 NAPA Warehouses; jobbers everywhere give prompt service.

AMERICAN BRAKEBLOK DIVISION OF THE AMERICAN BRAKE SHOE & FOUNDRY COMPANY, DETROIT, MICHIGAN

(CONTINUED FROM PAGE 84)

old truck "possibly might be worth their weight in gold."

H. H. Kelly, Executive Secretary of the Central Motor Transportation Committee and vice-chairman of the Motor Vehicle Section of the National Safety Council, was another speaker who also could talk with some official authority about the national defense situation and the trucking industry. He presided at the special session on "Commercial Vehicle Maintenance Problems." His opening statements were informal and brief. He remarked that the sessions had "a foreboding background" as related to national motor vehicle safety —increasing accidents and a traffic emergency situation. Obviously, something is happening to the general public and the motor industry. Reports of the National Safety Council for the first nine months of the year show general motor vehicle accidents up 17 per cent compared with the previous year. Reports of motor carriers to the I.C.C. for the first nine months show even higher increases—25 per cent in frequency and 53 per cent in severity. This is assumed to be caused by the increase in traffic congestion and by many new and incompetent highway drivers.

He also was hopeful about the future supply of new equipment needed by the trucking industry, but reminded the delegates that defense conditions demand the curtailment of certain critical materials. Thus the motor industry may be forced to continue to make use of some of the older equipment which it had been hoped could have been junked.

"But we must realize," Mr. Kelly reminded, "that all highway motor equipment must be kept repaired."

He reported that toward this general end the Central Motor Transportation Committee at Washington, which represents all the various branches of the motor vehicle industry, would soon issue a series of press releases on vehicle maintenance. The first two releases had already been prepared and were planned to be of especial benefit to small motor fleet operators in the care of their equipment. Such maintenance would be made possible and encouraged by the existing priorities to make available the needed supply of repair materials and parts. One of the most important phases of such maintenance, said Kelly, is adequate maintenance of brakes.

J. Donald Roach, Sales Engineer of U. S. Asbestos Division of Raybestos-Manhattan, Inc., was introduced by Mr. Kelly as an expert in this last-mentioned field, and he spoke on the subject "Brakes—Their Performance and Maintenance." He stated that very few fleets have properly maintained brakes, as proved by the recent I.C.C. highway tests. He mentioned, as one of the complications in a brake maintenance program, that many highway trucking outfits are basically unbalanced for braking because made up of different makes of tractors and trailers and brakes never coordinated for braking balance. Also, very few fleet shops have proper maintenance equipment for brakes; and shop labor programs usually are not well planned for brake maintenance. Most shop mechanics are not well trained in brake maintenance, and they do not like the job because of the poor working apparatus and because it is considered dirty work.

H. O. Mathews, Automotive Engineer of Standard Gas & Electric Co., Chicago, reviewed his experience in "Control of Maintenance of a Scattered Fleet." His remarks are given in full in the article on scattered fleet maintenance on page 25.

R. C. Haven, Safety Engineer of Continental Baking Company, Inc., New York City, started off the distinctive "driver training" features of the Safety Congress by a talk on "Driver Selection and Training in War Times." The operations of his company are widely scattered, with 88 different supervisors. To get new drivers, they have been hiring some former older drivers and many others not yet well trained. However, they still have been able to keep up their high basic physical test requirements.

Over their entire system they have about 3000 accidents a year, and 91 per cent of them are charged to "driving inattention." Hence their biggest safety problem is "the human equation." The chief remedy is well-planned "safety shots in the arm" for all new drivers and accident-prone old drivers. This "safety operation" must be conducted under the most favorable mental and physical conditions

(TURN TO PAGE 90, PLEASE)

New *Taylor-Made* TIRE CHAINS

ON ALL 4 WHEELS MEAN

FOUR-FOLD SAFETY

... MONEY SAVING EQUIPMENT for Truck & Fleet Owners!

OWNERS of trucks and fleets are *doubling* chain equipment this year.

With today's conditions affecting manufacture, present trucks may have to be used indefinitely. Another reason for even more safeguards on slippery streets and highways.

This means TAYLOR-MADE Chains on all four wheels. The National Safety Council has proved that new chains on front wheels give 50% to 80% more braking efficiency than old worn chains on rear wheels alone.

Save lives and liabilities—save your trucks—protect yourself with this *lowest-priced of all insurance* against the siege of your drives with the rain, snow, sleet, mud and icy glare of the bad going on hand.

Wise truck owners specify TAYLOR-MADE Tire Chains on their experience—with Taylor's years of reputation for Dependability—Durability—Latest Design for utmost Convenience and Efficiency. Taylor-Made Chains are furnished for every kind and size of commercial vehicle. *See your Taylor Dealer—write us for catalog.*

T-M BAR-REINFORCED, REGULAR, AND EXTRA-HEAVY PASSENGER CAR, TRUCK, AND BUS CHAINS, CROSS CHAINS, DUALS, AND T-M KWIK-ON ROD CHAINS, TWIST LINK AND TRACTO-GRIP TRACTOR CHAINS, EMERGENCY UNITS, TOOLS AND ALL REPAIR PARTS.

S. G. TAYLOR CHAIN CO.

Established 1873

HAMMOND, INDIANA

TACHOGRAPH CHART *tells all!*

New RECORDING SPEEDOMETER provides automatic GRAPHIC LOG of SPEED, TIME and DISTANCE

Illustration at right shows Tachograph which replaces original speedometer on truck. Speedometer, clock and warning light are visible for the driver's convenience. The Tachograph chart is locked inside the instrument.

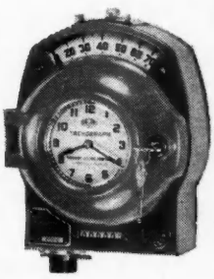


Illustration below shows Tachograph open. Finger points to chart on which three styli have recorded movements of truck.

LOWER YOUR HAULING COSTS

by equipping each of your trucks with a

SANGAMO TACHOGRAPH

If you could sit next to the driver and make notes on the speed, stops, how long the truck was tied up at any place—in fact, on its every move during the trip—wouldn't you be able to point the way to greater operating economy, to savings in time, and to new safety records? And wouldn't you be in a better position to direct your employees and support them when the records prove that your employees meet factors beyond their control?

Astounding as it sounds, you can do just that—yet remain at your desk! Through the chart made by the Sangamo Tachograph you will learn as much of the truck's operation as though you were the driver. You will *know* all the *facts* of the truck's daily operation.

Join the fleet operators who are now deriving the benefits from hundreds of Tachographs already in service.

Get complete information on what the Tachograph can do for YOU. This *silent* supervisor will quickly pay for itself out of savings in truck operating cost. Manufactured by Sangamo Electric Company, and distributed exclusively by the Wagner Electric Corporation.

Clip and Mail Coupon for Details

841-2A
CCJ

AUTOMOTIVE PARTS DIVISION

Wagner Electric Corporation

6470 Plymouth Ave., St. Louis, Mo., U. S. A.

☐ Please send a copy of "Savings & Safety."

☐ Have your nearest branch call on us regarding the Tachograph.

Name and Position _____

Company _____

Address _____

We operate _____ trucks.

(CONTINUED FROM PAGE 86)

for the driver. Encourage him to open up for a frank talk. If he is of the salesman type, talk to him in terms of the cost of an accident and the sales profits from his hard work that thereby will be wiped out. Talk about the cost to him personally and to his family of a possible accident injury, if permanently disabled or laid up for a time on reduced "compensation payments."

Morgan B. Speir, Jr., Director of Safety and Personnel, Horton Motor Truck Lines, Charlotte, N. C., presided at the special session on "Testing the Driver."

William S. Lawrence, Director of Safety of U. S. Truck Lines, Inc., Cleveland, divided honors with Dr. W. E. Mishler, Cleveland, in presenting the topic, "The Doctor Looks Him Over." Lawrence explained that back in 1935 his company and subsidiary units organized a Safety League, then started a safety survey to enable them to tackle accidents at their source. They decided that since the National Safety Council says 92 to 93 per cent of all accidents are chargeable to "failure of the human element," it is nonsensical to check motor vehicles only and not check the physical and mental condition of the drivers themselves.

They encountered basic opposition by the driver unions, "because of some previous abuses in the use of physical examinations." To remove this opposition they established a program whereby the original examinations are made by local company surgeons, then passed on for final decision by their company Surgeon General. The relationship between the applicants examined and all the doctors is kept as confidential as possible.

"If a man is rejected as a driver," said Lawrence, "we believe he is entitled to know the reasons why. He thus is encouraged to remove, if possible, the causes for his rejection."

Dr. W. E. Mishler, Chief Surgeon of U. S. Truck Lines, Inc., summarized results from physical examination made during an example period of 30 months from January, 1939, to July, 1941. Full details of this investigation are given in Dr. Mishler's article on page 24.

Amos E. Neyhart, administrative head of the Institute of Public Safety, Pennsylvania State College, stirred much comment by his illustrated talk on "A Practical Road Test Plan." During a period of five years this department has been working cooperatively with motor fleet operators on a practical program to test the native abilities and skill of both new and old drivers. They developed two different types of test. One is an open road test, somewhat like those used by some states in examining applicants for motor vehicle licenses. It should be extensive enough to include a number of repetitions of all the common traffic hazards, and a display of the essential driving skills and loading practices. The same exact course should always be used, and supervised by the same company examiner. He thus will develop standardized test records which, if checked occasionally by the known best company drivers, will become a valuable guide in selecting new drivers and in stimulating old drivers to brush off careless habits and to learn more about handling some new unit of equipment.

The second "inside test" created the most interest. This test can be conducted in limited space, is more easily supervised and checked, and is designed to simulate practically all skills needed and hazards encountered in the outside test, and additional ones up to a possible total of 25. They include driving accurately along straight lines, hair-breadth forward and backing stops, braking stop demonstrations, smoothness in starting, stopping and turning, etc. It was declared that many fleet tests indicate that this "inside test" is equally as effective as the outside test in selection and training of good truck drivers, but that most of such fleets use both tests.

J. W. Lord, Safety Engineer of Atlantic Refining Co., Philadelphia, stated that his company has been profitably following this program in selecting and training the 100 extra drivers they need each fall. He said such groups of new drivers have had accident records "about as good" as his older drivers, and "about two and a half times better" than their former new drivers. This program, he said, has helped them in getting "better all-round new men" and also in training their old drivers in handling new kinds of equipment.

(TURN TO PAGE 92, PLEASE)

HERE is a new kind of truck or tractor carrying a second engine which adds its power to that of the conventional engine automatically when needed, increasing the horsepower of the original Chevrolet chassis over 50%.

The booster engine stands by for instant service, "cutting-in" when additional power is required and "cutting-out" when the need has passed.

In thousands of miles of heavy service, in hilly country, level sections and cross-country these

TRUCKSTELL CLARK BOOSTER CONVERSIONS

of Chevrolet have proved these exclusive advantages:

1. High Gear Operation Unequalled by More Expensive Trucks.
2. Faster Sustained Speed Between Terminals.
3. Less Time Per Trip and More Trips Per Week.
4. Increased Payload Capacity of 1500 to 2500 Pounds.
5. No Increase in Gas Consumption.
6. More Revenue With Greater Profit.

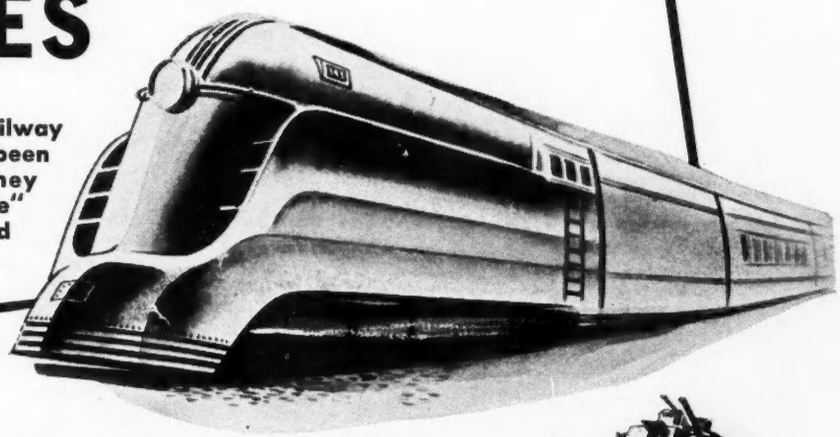
Write for Descriptive Literature and the Very Low Initial Cost Which Will Surprise You.

CLARK Automatic Booster CONVERSIONS
THORNTON Four Rear Wheel-Drive CONVERSION
TRUXMORE Trailing 3rd Axle CONVERSION
HEAVY DUTY Four Wheel CONVERSIONS
EATON 2-Speed AXLE
CLARK Ford and Chevrolet SPOKE WHEELS
DIAMOND Safety Gas TANKS
WATSON-BROWN-LIPE TRANSMISSIONS

TRUCKSTELL CLEVELAND
P. O. BOX 3827
CONVERTERS of Standard TRUCKS for Special USES
DISTRIBUTORS of Tested and Approved TRUCK EQUIPMENT

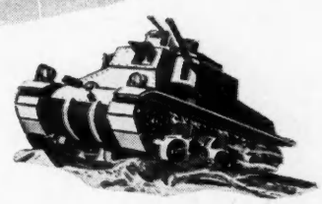
USE THE SHOCK ABSORBERS THE RAILROADS USE! MONROES

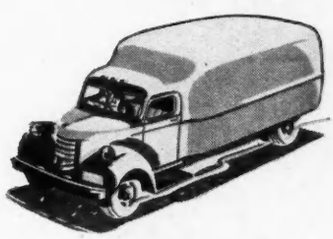
Since 1938, over 70% of all Railway Passenger Cars built have been equipped with Monroes—they are the only "Airplane Type" Shock Absorbers approved and installed by the Railroads.



THE SHOCK ABSORBERS FOR THE TOUGHEST JOBS!

MONROE "AIRPLANE TYPE" HYDRAULIC





There's a size for every job—it doesn't matter what the requirements may be. When used on defense equipment, Monroes have proved that over the toughest, most rugged terrain, they maintain control that is almost unbelievable.

•

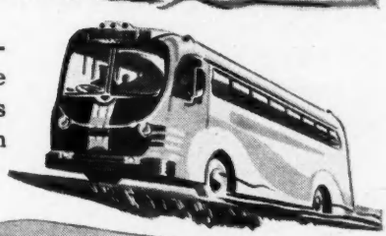
Monroes are best for
Tanks, Trucks, Blitz Buggies, Busses, Quads, Commercial Cars, Troop Transports, Trailers, Trains, Jeeps, Automobiles.

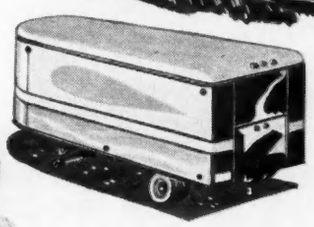
•

The engineering principles embodied and patented—the precision manufacture executed—have made Monroes acceptable in every field where Shock Absorbers are used. For years Monroes have proved their superiority in every country in the world, and under all climatic conditions.

•

We will be glad to discuss your problems with you.





MONROE
MONROE AUTO EQUIPMENT CO... MONROE, MICH.

(CONTINUED FROM PAGE 90)

Charles G. Morgan, Jr., Manager of Division of Operations, A.T.A., was chairman of the session on "Safe Loading and Safe Routing."

Don Wilson, Superintendent of Automotive Equipment, New York Power & Light Corp., Albany, N. Y., started off by discussing "load distribution factors" as related to the safe operation and maintenance of road equipment. He discusses this subject under the title "Fifth Wheel Location" on page 23.

The "safe routing" part of the program consisted of a "panel discussion" put on by members of a special Commercial Vehicle Section committee. It included H. J. Jones, Director of Safety and Personnel, Automobile Shippers, Inc., Detroit; J. W. Lord, Atlantic Refining Co.; Dwight M. McCracken, Director of Traffic and Safety Bureau, Liberty Mutual Insurance Co.

Questionnaires had been sent to fleet operators asking about steps taken to reroute vehicles to avoid accident hazards and results. Replies, in the following order of importance, indicated that routes were decided to be too hazardous because of: suggestions from their drivers, supervisor route studies, accident records, police or other city accident records, newspaper and police information. New routes were worked out from driver suggestions, study of maps and management routing tests. Sometimes no better alternate route was available, or it represented too much time increase; then drivers usually would be warned about the hazardous spots.

In general, operators answering this question reported decrease in accidents. Increase in new route distances varied from "slight" to 5 miles; more operators reported a "decrease" in the time of the re-routed trip than an "increase." Examples of rerouting included such areas as Boston, Newark, San Francisco, New Jersey, Pennsylvania. One company reported four accidents in a week over a route from Detroit to Fort Wayne. Then they changed the route via Toledo and in 18 months have had no accidents.

E. D. Jackson, Attorney of Motor Vehicle Service of U. S. Post Office, Chicago, reported that they began some years ago to plot all accidents of each driver on a separate driver-collision diagram. Movement of the vehicle at the time of the accident is always assumed to be in the same direction. Thus the diagram, which also includes the date for each accident, as well as hour of day and weather condition, will show up any common "pattern" in a group of accidents. As a result, any general accident cause often can be removed.

L. S. Harris, Executive Director of the American Association of Motor Vehicle Administrators, gave a talk on "Traffic and National Defense."

"Traffic congestion which has long caused delay and exasperation," said he, "becomes intolerable when it interferes with national defense transport. Hazardous highway conditions and inadequate structures were tolerated when they affected only civilian pursuits, but they cannot be permitted to retard military convoys.

"Regardless of whether we go to war or remain at peace," he said, "one of the major benefits we will reap from our defense activities will be the breaking down of existing barriers against highway transportation. That will bring closer the time when we shall have a national policy pertaining to the use of our highways and nationally uniform motor vehicle laws and traffic regulations."

The newly elected officers of the Commercial Vehicle Section are as follows: General Chairman, J. W. Lord, Safety Engineer, Atlantic Refining Co., Philadelphia; Vice-Chairman, Dwight M. McCracken, Director, Traffic Safety Bureau, Liberty Mutual Insurance Co., Boston; Vice-Chairman, W. F. Brown, Consolidated Edison Co. of New York, Inc., New York City; Vice-Chairman, Morgan B. Speir, Jr., Director, Safety and Personnel, Horton Motor Lines, Inc., Charlotte, N. C.; Secretary, John A. Ebeling, Director, Safety and Personnel, Olson Transportation Co., Green Bay, Wis.; Membership Committee Chairman, H. D. Scheffer, Safety Director, Auto Owners Insurance Co., Lansing, Mich.; Program Committee Chairman, H. J. Jones, Director, Safety and Personnel, Automobile Shippers, Inc., Detroit.

END

(Please resume your reading on p. 23)

Gatke QUALITY

INTRODUCED Genuine Moulded Brake Lining for automotive use.

ORIGINATED Wire-Back Moulded Brake Block

DEVELOPED the first patentable automotive brake lining.

PIONEERED *CUSTOM-BILT* Brake Lining Sets.

LED the development of Brake Blocks for Trucks, Trailers and Buses.

CHAMPIONED the correct balance between liners of primary and secondary shoes as essential to maximum brake efficiency.

INVENTED Grooved DURA-BLOK Brake Lining.

PERFECTED the Simplified Brake Survey System for Fleet Operators.

Every Fleet Operator knows the vital importance of Correct Brake Lining to Safe and Economical Operation.

This is why the GATKE Brake Survey System has proved so popular.

Thru this System GATKE applies experience compiled from years of service on thousands of units to your equipment under your conditions.

You get the Foremost Brake Lining Developments — CUSTOM-BILT for your job by men who know brakes. You get the last word in dependable service — long wear — and low cost — plus new convenience.

Ask your GATKE Jobber or write us.

GATKE CORPORATION
228 N. La Salle St. Chicago, Ill.

When you buy Snowplow ALWAYS ASK THESE Two QUESTIONS!

WHEN you have several hundred miles of highway tied up by the last blizzard, you don't want to be the laboratory for anybody's machinery. Then, above all times, you want machinery that you can depend on to move snow. Today's emergency—the movement of materials—the need for open roads makes this true more than ever before.

When you consider the purchase of a snow plow, particularly one of the rotary type, ask these two questions—

How many years of actual service are there behind it?

How many plows are there in service?

Snogo has fifteen years of actual operation behind it! It has been proved as no other rotary type of plow has been proved.

There are more Snogos in service than any other make of plow of this type, and repeat orders from many cities, state and county highway departments offer a testimonial to Snogo's successful operation that can't be equalled.

This winter, goods *must* move! Defense begins with open roads. The range of Snogo prices and sizes is such that no city, county or state need be without Snogo-proved protection. Don't experiment with untried machinery!

KLAUER MANUFACTURING CO.
Dubuque, Iowa

THERE IS A SNOGO FOR EVERY BUDGET—FROM A 1½ TON TO THE LARGEST FOUR WHEEL DRIVE TYPE OF TRUCK

SNOGO

For Complete Snow Removal

Defense Depends on Open Roads

SUPERCHARGER EXPERIENCE

(CONTINUED FROM PAGE 31)

and all remarks are made with reference to this make only. The supercharging is by a Roots type blower, driven by three belts from the front end of the crankshaft, operating at 3000 r.p.m., having an output of 790 cu. ft. per minute at 1400 r.p.m., or a boost of three pounds per square inch pressure at that sped, and weighs approximately 250 lb. The radiator is of somewhat larger capacity and heat dissipation and this adds another 250 lb., making a total of 500 lb. added to the vehicle weight.

Experience with these engines has varied widely in satisfaction and results. The picture is very much mixed and the true results are somewhat beclouded by adverse results obtained from improper installations, improper servicing, some trouble with materials and parts, and lubrication oils.

Some lubrication oils promoted for this make of engine have proven a considerable problem. In some cases the oil foamed so that the lubrication circulating pump failed to circulate the lubricant, causing the bohn-copper con-rod bearing seizure to the crankshaft. Certain additives proved extremely active at certain temperatures. This means that some oils may do no harm at all at around 180 to 190 degrees, but may be extremely unreliable at 200 to 210 degrees. Consequently, in some cases the connecting rod bearings completely disintegrated. The oil temperature is also important in the general sense, but is of particular value when utilizing the copper-alloy type bearings.

The overheating conditions experienced are chiefly caused by inadequate radiation. This has been a critical situation, and still is. Inadequate radiation has caused many piston siezures under acceleration conditions, and has led to extremely unsatisfactory results of this engine's use in some installations.

The iron pistons as used are due for a good deal of development to meet the changing conditions and the future possibilities, but the aluminum alloy pistons offer the best line of development. Better control of piston shape under temperature is a necessary improvement.

With increased horsepower output of the supercharged diesel engines the need for the use of different construction valves may be necessary, particularly the exhaust valve. The aircraft development up to date has shown the possibility in this direction.

The fuel consumption in mileage per gallon is somewhat more, but additional performance, particularly where many grades are encountered, and increased power, enables transport trucks to move at a considerably faster average speed over highway, and since time is involved in cost per mile also, this more than offsets the difference in fuel consumption and places the supercharged engine well over the non-supercharged engine on an economical basis.

The nature of supercharged diesel engine use is such that no broad statement or rule can be made regarding their application to every highway transport truck use. Each installation must be treated indi-

(TURN TO PAGE 98, PLEASE)

VOTE with the PRESIDENT of the United States on this VITAL ISSUE!

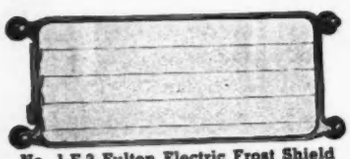
UNDER date of Aug. 18, 1941, the President of the United States issued a proclamation calling upon every citizen, in public or private capacity, to help prevent the tremendous wastage of human and material resources, caused by accidents. He called upon the officers and directors of the National Safety Council to mobilize the nation-wide resources of this great organization to help promote SAFETY . . . on the *highways*, as well as at home and in industry.

The President pointed out that our Nation is confronted with a rapidly rising accident toll which, last year, totalled 34,500 traffic fatalities . . . exceeded this year by 17%, for the same period of time, up to the date of the presidential proclamation.

Because accidents definitely slow down and hinder our national defense program; because maximum work efficiency in all lines requires maximum safety 24 hours a day . . . the Chief Executive of the United States asks united cooperation to *stop* accidents!

Licensed under U. S. Pat. No. 2,095,223 Canadian Pat. No. 370,548

No. 496 FAN



No. 1-F-3 Fulton Electric Frost Shield Glass Size: 16" x 7"

YOU can help both your own interests and those of our country by equipping your trucks with Fulton Clear-Vision Safety Devices . . . FULTON ELECTRIC SLEET-FROST-SHIELDS or FULTON RUBBER-BLADED DEFROSTING FANS. Supplied in both 6- and 12-volt types. Order from your jobber . . . or write us direct if he cannot supply you.

THE FULTON CO. 1912 South 82nd Street Milwaukee • Wisconsin

OPERATING 136 PIECES OF EQUIPMENT FOR 3,500,000 MILES A YEAR . . .

Novick Transfer Co. relies on Thermoid BRAKE LININGS

With a fleet of 55 tractors, 55 trailers, and 26 straight jobs, Novick Transfer Co., of Winchester, Va., operates routes in an 8-state area that includes the busiest highways in the country. They have 14 terminal points in cities as widely separated as Roanoke, Va., Hagerstown, Md., Philadelphia, Pa., and New York, N. Y. And like so many other transportation leaders, Novick relies on Thermoid for safe, economical stopping power!

Time and again, Thermoid has pioneered brake lining developments to meet the increasing requirements of the trucking industry. One example of this progress is a new line of Thermo-blocks which give even greater mileage and are *not affected by wet or slushy conditions.* Tests of this improved material, made with some of the country's leading fleets, have given positive proof of its advantages.

Try Thermoid Brake Linings under your own conditions—on your toughest unit. Judge by results alone—and we believe you will specify Thermoid for every other unit in your fleet.

Thermoid

CUSTOM-BUILT BRAKE LINING SETS • CBB SETS
THERMO-BLOCKS FOR HEAVIEST DUTY

★ THERMOID COMPANY ★ *Trenton, New Jersey* ★

(CONTINUED FROM PAGE 94)
vidually, its requirements and operation problems must be carefully analyzed. But the present background is of sufficient assurances that this type power plant is here to stay.

Questions asked by COMMERCIAL CAR JOURNAL and answered by Mr. Glade:

Q. What is status of the turbine type blower?

A. The centrifugal type of supercharger has not been used in truck diesel engines due to reluctance of fleetmen to adopt this extremely high speed unit. These boosters run at speeds between 18,000 and 25,000 r.p.m. However, it is expected that in the future we shall have centrifugal units combining the pressure characteristics of the positive displacement blower with low circumferential speeds.

Q. What about supercharger speeds?

A. Speeds vary greatly. On the Cummins engine the speed is from 3000 to 4200 r.p.m. and efforts have been made to further increase speed. The objective is to reduce the physical size and weight of the attachment.

Q. What are the general problems associated with superchargers?

A. Reliability is as good or perhaps better than the engine. But because they are precision mechanisms, the average mechanic is not qualified to dismantle, repair, or reassemble them. In fact few operators have either the facilities or the tools for doing such work.

Q. What about back pressure and manifolding?

A. Exhaust manifolds must be of the most efficient type and it may be necessary to go to water-cooled manifolding so as to decrease exhaust temperature. Back pressure must not exceed 1.5 inches of mercury. The back pressure of a supercharged engine should not exceed 3.25 in. of mercury, or 1.62 pounds per sq. in. Too much back pressure in a supercharged engine definitely reduces the flushing action of the blower and is detrimental to satisfactory operation.

Q. What are the advantages of supercharged engines?

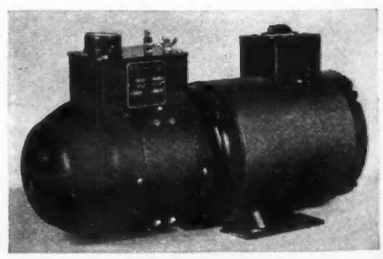
A. Power obtained from our units is about a gear ratio or a gear and a half higher. On a run between San Francisco and Pocatello, Idaho, a distance of 850 miles, we save about 3.5 hours' running time. Assuming that a transport truck is on the road 12 hours a day and costs about $5 per hour, this results in a saving of about $15 per day. Assuming a truck operation of 300 days per year, this may mean a saving of around $4500 per year.

END

(Please resume your reading on p. 32)

Battery Booster Generator

A new type of motor-generator has been developed by W. D. Foreman, manufacturer of Foreman Battery Boosters, Chicago. In this new unit the motor and generator are mounted on one set of sealed ball bearings eliminating the coupling, doing away with all possibility of mis-alignment, coupling wear, and resulting noise. The unit is furnished in all regular models.



MILLIONS of motorists place efficient and uninterrupted car performance above the initial price of parts. They prefer long range economy to low initial cost. These statements are proved by the wide and steadily growing acceptance of Blue Streak Ignition Parts by car owners everywhere.

The same factors that have created a strong trend toward "Blue Streak" in the passenger car field apply even more forcefully to commercial cars and buses, where it is imperative to maintain unbroken service.

Blue Streak Ignition Parts overcome every weakness in the design and construction of conventional ignition parts. They are built for "long life peak performance"—to give greater efficiency from the start—and to retain their efficiency over abnormally long periods.

Hook up with "Blue Streak" long range economy. A competitive test will surprise you.

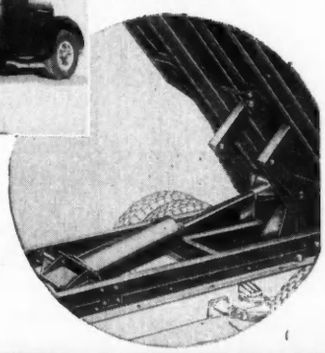
STANDARD MOTOR PRODUCTS, INC.
37-46 Northern Blvd., Long Island City, N. Y.

MOTOR STANDARD PRODUCTS
BLUE STREAK
IGNITION PARTS
BATTERY CABLES
AUTOMOTIVE WIRE

"The ABILITY to serve well is as important as the WILL to do so."

ANTHONY *Super* HYDRAULIC HOISTS { A COMPLETE LINE IN ONE DESIGN FROM—

Now every DESIRABLE MECHANICAL FEATURE so VITALLY NECESSARY for PROFITABLE DUMP TRUCK OPERATION is BUILT INTO EACH OF 9 SUPER HOIST SIZES. Whether you buy a 1½ yard or 20 yard dump body you get the advantages of all of these features . . .

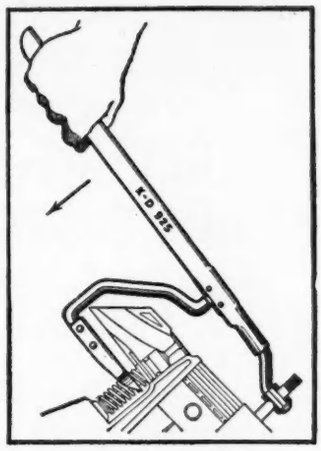


. . . "Push-Pull" dash control . . . Double Arm "Power-Speed" lift . . . "Low Mounting Height" . . . Special "Rubber Restraining Blocks" . . . "Telescopic" hoist frame . . . "Floating Gear" Pump, etc. . . . Write today for complete interesting details of these Super Hoists.

ANTHONY CO., INC. STREATOR, ILLINOIS

DESIGNED TO SAVE YOU TIME

THE NEW K-D 925
VALVE GUIDE ASSEMBLY REPLACING TOOL
FOR FORD-BUILT MOTORS



You're working on a Lincoln-Zephyr . . . or maybe a Ford 85 or a Mercury. You have all the valves ground and the assemblies are ready to go back in the block.

Now's the time to reach for the NEW K-D 925.

Place the swivel end on one of the head studs and the jaw between the coils of the spring, engaged on the flange of the guides. Push down on the handle and put the guide retainer in place . . . it's easy! It's fast! It's sure!

Ask your Jobber for your net price on this new K-D Tool. The 925 for Replacing Valve Assemblies in Lincoln-Zephyr, Ford V-8-85 and Mercury motors. (*Not* for removing . . . use K-D 920 Set for that job.)

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You want a quality compressor because it will give you quality service. The sturdy Ingersoll-Rand V-type construction with ball bearings, stainless-steel finger valves, dust-tight crank-case and I-R automatic centrifugal unloaders is just what you require. They assure you of years of trouble-free service. Ask the Ingersoll-Rand jobber about them. The cost is moderate. The performance of these compressors will exceed your expectations.

1½ hp. vertical two-stage compressor

3-26

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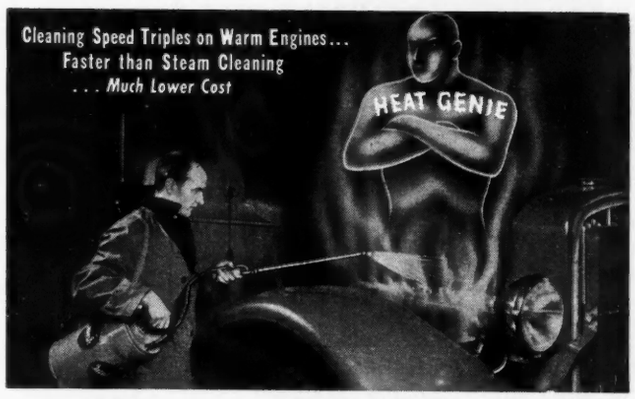

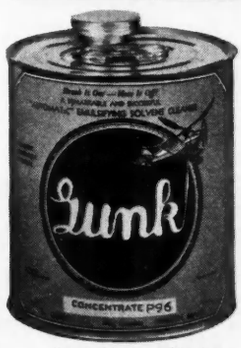

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General purpose garage and chassis degreaser. Dilute 9 parts low-cost kerosene . . . brush or spray on parts to be cleaned.

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Not in stock at my jobber . . . attached TO MY BUSINESS LETTERHEAD is my check, or M. O. on the condition that you ship me a 1-gallon size, GUNK at dealer's net cost $1.75 ($1.90 west of the Mississippi) by FAST PREPAID AMERICAN EXPRESS.

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Every hour one of your trucks spends in the shop means one hour LESS it can work for you! So speeding up repairs this easy Oakite way is important to YOU.

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Representatives in all Principal Cities of the U. S. and Canada

OAKITE Certified CLEANING
MATERIALS METHODS SERVICE — FOR EVERY CLEANING REQUIREMENT

WASHINGTON RUNAROUND

(CONTINUED FROM PAGE 19)

ed to Jan. 31, 1942, by O. P. M. . . . Light truck production for civilian use in January will be curtailed 35.9 per cent below output in the same month this year. That figures out at 24,169 light trucks. . . . Government spending is now at a rate of $1,250,000,000 a month. By April it is expected to be $2,000,000,000 a month. In terms of dollars spent All-Out Aid is estimated at $4,000,000,000 a month. Whew! . . . Talk about standardizing on truck manufacture isn't getting many listeners because of the tooling problem involved. . . . The CMTC is working on a plan of civilian allocation to be invoked when, as and if needed. . . . Reports keep filtering into Washington that there is a tendency among dealers to hoard replacement parts. This tendency is something for fleetmen to watch and to report. . . . A Senate Committee will begin hearings Dec. 8 on S. 2015, the size and weight Federal regulation bill introduced by Senator Wheeler.

END

(Please resume your reading on p. 20)

CHROME PLATING

(CONTINUED FROM PAGE 30)

manner. The estimated hours in service can probably be multiplied by twenty to arrive at equivalent mileage. You will note that the rate of wear is very low.

"The chromium plating in this case was done by a firm operating under the Udylite process—chromium being applied directly to the iron." The tabulated results are shown at right:

4. A. T. Stahl, Testing Engineer, International-Plainfield Motor Co., Plainfield, N. J.:

"(a) It has been found in this area at least, that reconditioning by plating is not at all practical above .010 to .015 due to extremely high cost of

(TURN TO PAGE 119, PLEASE)

Report on Chromium Cylinder Plating

1. M.V. No. 2739—AA Ford 1929 model—San Francisco Division—Shop Tow Car. No thermostat—water pump and fan in operation. Low mileage—intermittent service with long periods not running. March 28, 1933; Odometer 33,164. All cylinders ground—#2 and #3 chromium plated. Standard Ford pistons and rings. Plated cylinders honed—surface smooth but not mirror finish. Thickness of chrome after honing .0015. All cylinders 3.902 at start.

Date	Odo.	Miles Run on Test	Ave. Comp. Press.	Cylinder Wear Plated 1	2	3	4	Condition of Chrome Plate
3-28-33	40,164	0	70					
		400	76					
		900	80					
12-23-36	47,664	7,500	80	.006	0	0	.006	25% mirror
2-6-39	50,114	9,950	80	.008	.001	.001	.009	same
4-10-41	52,283	12,119	80	.009	.001	.001	.010	40% mirror

2. Ford V8-85 Engine operating Ford V8 converted compressor, North Bay Division. March 13, 1939—all cylinders chrome plated—honed very lightly—just enough to remove small particles of oxide. Surface mirror finish. All parts standard Ford.

Date	Hours in Service	Equiv. Miles Run	Cylinder Wear All Cylinders
3-13-39	0	0	
6-26-39	450	9,000	.0005 to .00075
10-2-39	870	17,400	.0005 to .00075
1-8-40	1,290	25,800	.0005 to .00075
4-11-41	2,490	49,800	.0005 to .00075

Note: Hours in service estimated. Cylinders very smooth and very dry. Oil dilution high, as much as 15 per cent.

Note that after initial wear, no further wear occurred.

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★ ★ ★ K-D LAMP CO. ★ ★ ★ CINCINNATI, O.

(CONTINUED FROM PAGE 118)

power consumption beyond this thickness.

"(b) Chrome over an initial copper plate has not been especially successful. It is found that with the proper preparation, the plating is far superior when applied directly to raw steel. The preparation consists of reversal of polarity immediately before plating.

"(c) Experimental laboratory investigation of cylinder sleeve or bore plating indicates that this cannot be recklessly done, as the piston material and type of surface coating have a bearing on the possible success. In our experience anodized aluminum pistons become very sensitive when run in a chrome plated bore and may be subject to early seizure.

"In questioning our Metropolitan Service Branch we find that they have plated numerous cylinder sleeves in over-haul jobs but without exception, everyone of these sleeves ran with cast iron pistons (engine other than Mack)."

5. John Hawthorne, Service Manager, Leyland Motors Limited, Toronto 2, Ontario, Canada:

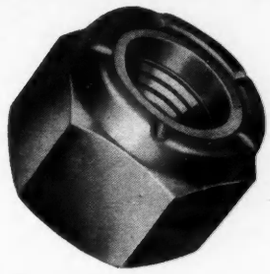
"Referring to your questionnaire re chrome plating as applied to automotive engines, we have just had hard chrome applied to the main bearing and connecting rod journals of one of our six-cylinder 100 hp. diesel engine crankshafts, 1950 r.p.m. journal diameter three inches.

"The shaft in question had seen considerable service and was not ground true before plating.

"Fifteen thousandths was first applied and the shaft removed for examination. Attempt was made to add further chrome but it would not take and the whole plating had to be removed and re-plated.

"Grinding shaft after plating removed most of the chrome but left approximately 3 to 5 thousandths.

"The shaft is just going into service on bus work and it may be some



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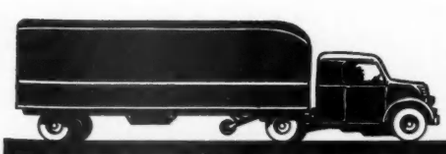

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It's so easy to do a real cleaning job with Magnusol. Just spray it on—let soak in a few minutes. Then rinse off with water hose. That's all.

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(CONTINUED FROM PAGE 119)

time before we get a story. We conclude, however, that in the application, the surfaces should first be true and then plated as we understand the heavier the plating the softer it becomes."

6. C. G. A. Rosen, Assistant Chief Engineer In Charge of Diesel Research, Caterpillar Tractor Co., Peoria, Ill.:

"In response to your request we are returning your questionnaire on chrome plating. In this respect the only references we can accurately give account of are those which have to do with our product. We have listed the use of chrome plating on water pump shafts in all of our engines.

"In addition to this information you might be interested to know that chrome plating is being applied by us to thrust side of certain thrust washers located in our tractor track rollers. While this application is not directly in line with your questionnaire request we include it here in reporting to you these two uses of chrome plating by us."

7. Fred B. Lautzenhiser, Chief Transportation Engineer, International Harvester Co., Chicago, Ill.:

"We do in regular production chrome plate some very few new parts such as water pump shafts, but not for the purpose of salvaging as referred to in the questionnaire in connection with engine maintenance."

8. S. G. Page, General Superintendent, Pittsburgh Motor Coach Co., Pittsburgh, Pa.:

"Worn crankshaft bearings built up with chromium and ground have been giving excellent results."

9. Henry L. Debbink, Superintendent of Motor Vehicles, The Milwaukee Electric Railway and Transport Co., Milwaukee, Wis.:

"We are not using it on engines but do chrome plate a number of parts to get better fits—for instance, bearing cones on hubs. We also chrome plate gear splines when they have worn slightly."

10. Max Dach, Vice-President, North Shore Bus Co., Inc., Flushing, N. Y.:

"We use chrome plating to increase the life of water pump shafts or any other accessory shaft which is subject to rapid wear and to lessen their overhaul periods."

11. F. P. Frankford, General Su-

— Oldforge —
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QUALITY FORGED HAND-TOOLS
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Write for complete line Catalogue
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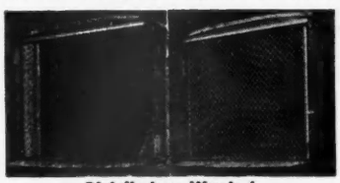
Safe . . . easy and simple to handle. Zehr Chain Link Gates are all-welded steel designed for great strength and long continuous service. They are theft-proof, rustproof and flexible.



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CONSULTING DESIGNING AND
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perintendent, Fifth Avenue Coach Co., New York, N. Y.:

"We have used chrome plating to renew the wearing surfaces of differential spiders, universal joint spiders, brake cams, steering pivot arms, compressor and engine camshafts, and eccentrics (zero lash system).

"We have also had 450 engine cylinder block bores chrome plated by the Van der Horst method.

"We find chrome plating to be very profitable."

From these reports it may be concluded that the following are typical uses of chromium plating that have been applied for the renewal of parts or prevention of wear and/or corrosion:

Engine cylinder walls, crank shafts, cam shafts, piston rings, cylinder sleeves, cylinder walls, water pump shafts, piston pins, rocker arms, eccentrics, chassis shackle pins, shaft splines, brake cam shafts, universal joint journals, ball and roller bearing seats, differential spider journals, steering pivot arms, tractor track roller thrust washers, bearing seal washers, air compressor crank shafts, air tool equipment, drills, taps, and reamers, gages, facing of forming tools, pump liners, deep well pump plungers, water well pump drive shafts, and plug valves, capscrews subject to removal.

The success of the users in these various applications justifies further consideration of the subject and should encourage others to make trials that may further develop the usefulness of the process of Chromium Plating in improving the efficiency of motor vehicle maintenance.

Other Users of Chrome Plating:

Purity Stores, San Francisco, Cal. Peter Glade in charge. Cylinder Walls—Cummings Diesel Engine.

Langendorf Bakeries, San Francisco, Cal. Walter Landerbaugh in charge. Cylinder Walls—Ford V-8 Engine.

North Coast Transportation Co., Seattle, Wash. Ted C. Howe in charge. Cylinder Walls—Hall Scott Engine.

END

(Please resume your reading on p. 31)

Florida, Michigan, New Hampshire, New Mexico, Tennessee and Utah passed legislation in 1941 harmonizing lighting equipment requirements for trucks with the ICC safety rules.

TARDY ROUTEMEN LOSE CUSTOMERS! It's easier to keep old customers than get new ones. Late deliveries "burn up" retailers. Keep supply lines open with Baker Plows. "V," reversible and one-way blade types. Readily mounted on any truck. Built to take it.

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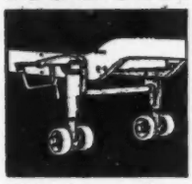

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The sole is perfectly smooth, and being made of pure white rubber, it leaves no mark on any surface. In action thousands of small rubber waves open up to create a squeegee effect.

FLEETMEN FIGURE DEFENSE NEEDS

(CONTINUED FROM PAGE 29)

operates a fleet of well over 200,000 vehicles. This requires over 20,000 good mechanics, over 40,000 helpers and a minimum of 300,000 trained drivers, and I think you will agree that that is a large order to fill in one year's time.

"Fortunately we have not had to do the whole job by ourselves. The auto industry has come to our help. It has not only lent us expert mechanics for instructors in our school but has established schools. Officers and enlisted men of the Army are now taking courses of instruction provided by the David Rankin School and the Carter Carburetor Co., the Goodyear Tire Co., General Motors Corp., Ford Motor Co., Chrysler Corp., Electric Auto-Lite Co., and the Harley Davidson Motorcycle Co."

F. K. Glynn, American Telephone and Telegraph Co., presented a progress report on a nation-wide survery conducted by the SAE, "How Can Motor Vehicle Equipment Be Used More Intensively In the National Emergency." As a progress report it was particularly satisfying because instead of being just on outline of a massive job partly done, it was a well completed job on a self-contained unit of the whole, namely, public utility fleets. As a paper for the meeting it was interesting and unusual in that besides the presentation of facts by Mr. Glynn, he called upon a board of experts to give the "how to do it details" of the points indicated by the facts. Similar thorough treatment of other types of fleets is promised in a foreword to the report.

G. D. Gilbert, Illinois Bell Telephone Co., took over the detail of "Operating a Passenger Car Pool," and stressed the necessity of good garage facilities, a good dispatcher and the need for maintaining pool cars to an even higher standard than those os assigned cars. Mr. Gilbert has found that he can supply transportation to 500 occasional car users with 50 cars, whereas without the pool he would have 200 assigned cars and there would be 300 employees without any company-owned transportation facilities. His method of determining the size of his pool is to add a car any time the use of drive-yourself cars equals the use of an additional car.

Mr. Gilbert's glowing tribute to the use of pooled cars is in complete agreement with the facts as disclosed by Mr. Glynn's survey.

Jean Y. Ray, Virginia Electric and Power Co., took over the detail of "Setting Up a Passenger Car Pool," and declared that pool vehicles should

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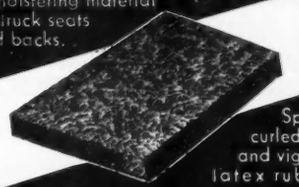
Upholstering material for truck seats and backs.



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Flush or regular type mounting Directional Signals

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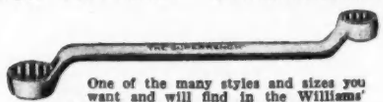

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TRUCK CHAINS
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THE McKAY CO., PITTSBURGH, PA., York, Pa.

be as near alike as possible to avoid friction in dispatching. Mr. Ray also stated that the first few months see abnormal demands upon the pool because employees try it out, but in a short time it settles down to normal. Mr. Ray had encountered no trouble in obtaining employee cooperation and had found that it took little time for employees to learn to use the pool intelligently and to double up on trips.

Mr. Ray's experience was a reduction of $42,000 in the cost of operation the first year, which was $12,000 more than the estimate. Annual mileage was reduced 360,000 miles, and handled with 97 cars instead of 125 cars. Increased traffic this year amounting to 6000 miles per month is being handled with 92 cars.

In his survey Mr. Glynn was able to find only one public utility fleet operator who did not perform some of his maintenance work at night. Disregarding this one operator, Mr. Glynn estimates that 50 per cent of the major repairs are done either at night or during non-service periods during the weekend.

As for pooling repairs, the fleet operators showed no inclination in that direction. E. W. Hubbard, General Motors Corp., carried the ball on "Pooling Repairs," by saying that many dealers are now planning 24-hour service and that service facilities of dealers could be expanded by at least 200 per cent. Mr. Hubbard made the point that in dealer service parts supplies could be centralized, thus eliminating duplicate stocks.

Fred B. Lautzenhiser, speculating on "Pooling of Repair Work for National Emergency," expressed confidence that from a broad industry standpoint such an emergency measure would work out. As Mr. Lautzenhiser sees it, such a plan would depend largelv upon unit replacement which would eliminate precision work from the field.

In the open discussion of this paper, Randolph Whitfield, Georgia Power Co., suggested using half-ton trucks for passenger transportation as a means of eliminating unnecessary mileage. Jean Ray volunteered that he was doing just that in some of his pools.

Harry O. Mathews, Public Utilitv Engineering and Service Co., stressed the need of a good dispatcher who knows the requirements of the various

(TURN TO PAGE 124, PLEASE)

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Dept. J-11121, Milwaukee, Wis.
BLACKHAWK

(CONTINUED FROM PAGE 123)

departments. Special attention to meter departments is necessary around moving days for householders because at that time the department's requirements are exceptionally heavy.

Continuing his discussion, Mr. Mathews stated that more thought should be devoted to measuring sticks of fleet efficiency such as customers-per-vehicle and customer-density and more attention paid to the ratio after it is developed. For an emergency measure, and perhaps normal practice, it was suggested that there be interchanged crew members for pole truck crews so that jointly owned or used poles could be replaced without the necessity of having two trucks make trips to it.

Relative to this latter point, Mr. Glynn said that safety would have to be considered since it was not good practice to have telephone men, who are accustomed to handling low tension wires, start to handle the high tension equipment.

On pooling mechanics in dealer or branch shops, Gavin Laurie, Atlantic Refining Co., said that it could and would be done as soon as it could be done as cheaply that way, but at present dealers wanted the trucks brought to their shops for service, and it frequently costs more money to get the truck there than it did to service it. On the same subject Jean Ray said that he had not found any dealers who did the work satisfactorily, and G. D. Gilbert stated that dealer's mechanics were now coming to his garages to service his vehicle equipment.

Edward S. Pardoe, on loan from Capital Transit Co., to OPM, wondered if there would not be a tendency to use company vehicles to get employees from home to work if transport equipment became scarce. This was done during the last war with some success. Mr. Glynn said

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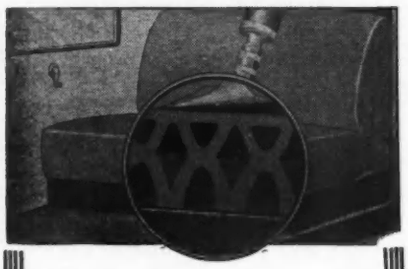

One fleet operator says "They wear like iron," another "They cut costs." These are *facts* from operators like yourself. They believe that you, too, can profit handsomely by installing Karpex Black Diamond special processed semi-sponge rubber seat cushions and back rests that guarantee extra long life and eliminate upkeep expense. The secret's in the new improved diamond grid construction with its bulldog stamina. Fit any truck. Send seat specifications for prices.

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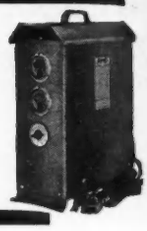

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AHLBERG BEARING COMPANY

Manufacturers of (CJB) *Master Ball Bearings*

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should be devoted to measuring sticks that at present in places where transportation was bad, and Joseph A. Harvey, Pittsburgh Motor Coach, immediately expressed the fear that there would be an abuse of such operation.

Getting back to pooling, S. G. Page, Equitable Auto Co., stated that he thought it was easily possible to get to the point where you were tailoring the operation to economical transportation instead of tailoring transportation to the needs of the business.

Austin M. Wolf, automotive consultant, thought that there was a need for dimensional standards and better service manuals, and with these helps he thought it was possible that technical crews of public utilities might be able to maintain vehicles at least so far as minor operations were concerned.

In a separate session Fred B. Lautzenhiser, International Harvester Co., reviewed the differences between the size and weight restrictions of the various states. At the conclusion of the recital Mr. Lautzenhiser said that he felt very optimistic, not about conditions as they were but because of the progress towards uniformity that had been made.

Mr. Lautzenhiser then gave what he called a "premature" presentation of the revised SAE size and weight code—premature because it has not yet been given the approval of the SAE Council. This code is as follows:

Width—96 in. (body); 102 in. (fenders).

Height—13½ ft.

Length—vehicle, 35 ft.; tractor, semitrailer, 45 ft.; other combinations, 65 ft.

	Axle Load		
	Streets	*Highways*	*Roads*
High pressure	22,500	18,000	16,000
Low pressure	26,000	20,000	18,000

Gross weight—Total of permissible axle loads. No bridge formula.

Tire load—Nothing.

In discussion Mr. Laurie stated that fleet operators would be reluctant to accept this code because it handicaps the private carrier who must travel over all types of roads and is therefore limited by the poorest class despite the fact that his mileage over this class may be very low while the common carrier uses only the highway class.

Emil Gohn, Atlantic Refining Co., went back to the review of state re-

(Turn to Page 126, Please)

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(CONTINUED FROM PAGE 125)

strictions and commented that the permissible axle loads and gross weight did not jibe. That is, in practical design it was impossible to get the gross weights permitted without overloading axles.

An anonymous contributor said that he was sure it would be hard for the enforcement authorities to distinguish between high and low pressure tires since the only difference in marking was the number of plies.

In a session devoted to "Engine Deposits," Errol J. Gay, Ethyl Gasoline Corp., presented a questionnaire with which he proposes to survey fleet operators and from the accumulated information study all sorts of engine deposits. After reading the questionnaire, Mr. Gay threw the meeting open to suggestions from the floor and he received a host of suggestions for further questions which would shed some light on the subject. More information on this subject will be forthcoming when the returns have been studied.

Commissioner John L. Rogers, of the ICC and now chairman of the Central Motor Transportation Committee, in a session devoted to "Defense Impact on Motor Transportation," expressed the philosophy that now was the time to plan for any emergency. Commisioner Rogers also felt that until it is really necessary there should be no attempts to make revolutionary changes that would affect a whole industry. During his talk the Commissioner indicated that there was a parts shortage in about half of the regions as set up by the CMTC. He warned fleet operators about hoarding parts since abnormal stocks will of themselves create a parts shortage.

Commissioner Rogers declared that the country has to depend upon truck transportation and it is counting upon the patriotism and sound judgment of the operators.

In discussion, Mr. Preble said that he thought yardsticks for particular industries could be brought into good use in the emergency and they should be developed on a more clean-cut basis. In one case, to Mr. Preble's knowledge, the efficiency of transportation increased 48 per cent by applying a measuring stick, and in another case the improvement was 51 per cent. Mr. Preble's further comments were that economy is now patriotism and that driver training is not merely a matter of slogans.

Merrill C. Horine, Mack Mfg. Co., said that he could not understand why, if there was a truck shortage, private operators should not be permitted to carry return loads and thus eliminate 50 per cent of useless truck mileage. He pointed to the success of the return load bureaus that flourished during the last war.

Discussing parts hoarding, B. H. Eaton, Bell Telephone Co. of Pa., said that he did not think there would be any parts hoarding if the operators could feel sure that they could get parts when they needed them.

Mr. Pardoe and Commissioner

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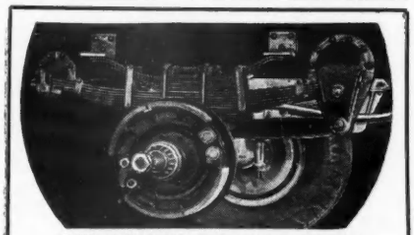
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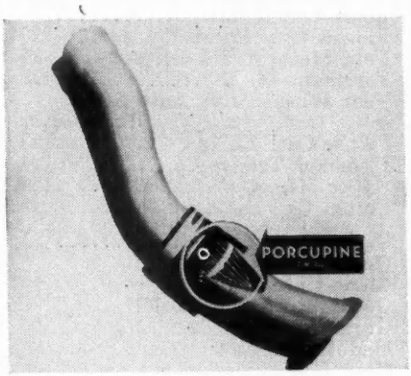
Rogers both said that priorities would give way to allocation by the first of the year. During the discussion Commissioner Rogers said that one of his principle problems was to decide when it was necessary to put an emergency measure into effect.

END

(Please resume your reading on p. 30)

Gas Tank Theft Guard

A new device designed to guard the gasoline in a gas tank is announced by Scully Signal Co., Cambridge, Mass. This anti-siphoning equipment, the Scully "Porcupine," is easily installed and involves no locks or keys. To install, it is only necessary to insert the unit—ball down—completely within the filler neck, cut the string which allows the wires to expand and make contact with sides of



the filler neck and, then, with a flexible stick, push the Porcupine down the filler neck until it stops. It will automatically lock in proper position in the rubber connection—between the upper and lower pipe fills, as shown in the illustration.

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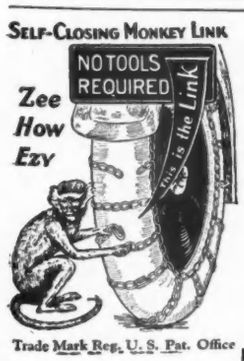

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